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## Some Aspects of Organo-therapy in its Relation to Veterinary Practice.

CENTRAL DIVISION N.V.M.A. DISCUSSION OF PROFESSOR SMYTHE'S PAPER.*

*Opening by Professor J. McCunn, M.R.C.V.S., M.R.C.S., L.R.C.P.*

Following the usual custom, but none the less with sincerity, I offer my congratulations to my colleague, Professor Smythe, on his paper. I know that he is especially interested in the subject of his essay, and that his paper is the product of much industry and thought.

I agree with him when he says that it would be impossible to deal with the subject thoroughly, or rather, fully, in the time at his disposal.

The mass of literature that has already accumulated on this subject makes me, as the opener of this discussion, thankful that I am called to bear my part in 1928 and not in 1982.

Professor Smythe has attacked a subject which in many of its aspects can truly be called " High brow," and he has presented to us, in a lucid manner, a good many points which are of particular interest to the veterinarian. The subject has, of late years, like all new branches of science, suffered from the zeal or over-enthusiasm of many of its exponents. Claims have been put forward which, in many cases, have been the result of a searching of the realms of fancy of its advocates. Its true value has been besmirched by the vapourings of its exponents. These latter have, in many cases, developed into nothing more nor less than twentieth century charlatans and "quacks."

The scientific discoveries of the physiologists, pathologists, and other workers, who have essayed to isolate active principles and work out their therapeutical and pharmacological actions and uses, have been seized upon by the commercial and notoriety-seeking individual.

From the perusal of present-day literature, commercial, and quasi-scientific, it would seem that the endocrine system can be blamed for all the ills of the animal world. All that would seem to be necessary is to inject glandular material from one animal into another animal, healthy or otherwise, and Utopia is at hand. The injected animal is immediately infused with the joy of life—if he be human he will even sing in his bath. To my mind, it seems to be a shame to seize these very essential tissues from one animal and transfer them to another, for if they are so essential to life the operation can only result in the death of the robbed one.

In a circular, which was sent to me by a well known firm specialising in glandular products, the wonderful something attributed to the endocrine system is, no doubt for the sake of brevity, called " It." The pamphlet says that it is a terrible thing to lose " It " and when a man has lost " It " he is compared to an " Automobile bumping along on three flat shoes, with the clutch slipping." Truly, " It " must be a wonderful thing, and after reading the pamphlet one suffers agony, thinking of what would happen if one lost " It," and wondering where " It " is.

One cannot wonder at the sceptical way in which glandular therapy is received by many able observers, when one takes into account the way the subject has been plagiarized, commercialised, and " panegyrised " by all and sundry of the " Quack " salvers and Rampallians of the country.

Professor Smythe is a native of a county fabled as the home of sorcery, wizards, witches and others who dealt in the occult sciences. Animal products figured largely in their armamentaria. He has delved in a world of mystery and magic and presented us with certain facts of which we may be able to make use in our sphere of life.

Anatomically, the presence of these glands has been known from time immemorial, but owing to the absence of any visible duct their purpose or functions were unknown.

For instance, the presence of the pituitary gland was well known to the ancients who, after much philosophical study and thought, attributed the nasal secretions to its activity. When one has a cold in the head, one could easily imagine that the pituitary had grown to an enoromus size. How near to the truth these men were. They associated the pituitary with the nose, and in the light of present-day embryological knowledge we know that at any rate part of this gland develops or originates from a hollow up-growth of the buccal ectoderm.

The spleen, by many, is considered to be a ductless gland. It has long been associated with anger. We know that the endocrine glands are under the control of the sympathetic nervous system. We also know that the emotions are principally under sympathetic control. The spleen increases in size as a result of accelerated heart action, the increase in volume being due to the increased quantity of blood it then contains.

One of the most palpable results of anger is an increase in the number of heart beats. One must assume that the presence of the spleen was known and also its supposed association with anger.

The testicles were no doubt the first of the endocrine glands to be made use of therapeutically as well as physiologically. The limitation of the slave's social activities was surely not the only reason for surgical interference. Was not the fact that great and powerful men servants could be produced thereby a deciding factor in favour of eunuchation ?

Although the existence of many of the endocrine glands was known in ancient history, it was not until the time of Bordem, in 1775, that it was suggested that each organ had what he called its " *Humeur Particuliére.*" The first experimental demonstration of an internal secretion was that of Berthold, in 1849. This man castrated

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cockerels and then transplanted the testes into the intestinal surface. He found that the birds then grew into apparently normal cocks.

Therapeutically, if somewhat empirically, it was early recognised that certain animal organs were of some use in the treatment of disease. We find that such authorities as Hippocrates, Celsus, Discorides and, later, Pliny, recommended the use of animal organs for the cure of disease in the identical organs in man. From the practical side, however, I do not think that there is much doubt that it was the association of the thyroid gland with such things as goitre, myxœdema, and cretinism in the human subject, which led to the real opening up of therapeutical endocrinology.

With these investigations we must associate the names of Sir William Gull, Charcot and McCarrison.

In 1874 Sir William Gull described what was subsequently termed, by Ord, in 1877, myxœdema.

From this time onwards research into the structure, function, and effect on the body in health and disease of these glands has been actively pursued, and the true etiology of many diseases has been made clear.

Good examples are Graves' disease or exophthalmic goitre and its association with the thyroid.

(2) Diabetes mellitis which, due to the work of Mering and Minskowski, was tracked to the pancreas.

(3) Addison's disease, which has been traced to interference with or deficient functional activity of the suprarenal bodies, the commonest cause of which, in the human being, is tuberculosis.

Professor Smythe uses Starling's terminology, *i.e.*, "hormones" to describe these internal secretions. Here I must disagree. The term "hormone" signifies an exciting substance. Some of the internal secretions act in a reverse manner; an example is the influence of the thymus gland on the reproductive organs. Its survival and action inhibit the development of the gonads.

In view of this and other cases, I am inclined to follow Schafer, who calls the inhibitory substances "chalones." He groups the two types, *i.e.*, hormones and chalones, under a single heading and calls them "autacoid substances," because of their drug-like action.

As Professor Smythe says, it is now known that the ductless glands are under the control of the autonomic system (sympathetic and para-sympathetic).

Each gland forms part of a delicate and intricate system. This system is balanced and one gland is affected by the well-being or otherwise of another gland.

In view of this, I would have liked the essayist to lay more stress on the fact that the diseases we now associate with one gland are not only evidence of defects in that gland, but indicate an affection of the whole system.

Judging from the literature, and one's personal experience, derangement of the endocrine system seems to be more common in the human subject than in our animal patients. In veterinary literature there is an absolute dearth of information. In the present state of knowledge, however, one cannot say that endocrine trouble is commoner in one species than in another. May it not be that we cannot recognise these diseases so well in our patients? May it not be that a different train of symptoms is evolved?

The essayist states that the endocrine system plays an important part in instinctive behaviour and emotional life. Now, is not the brute creation more subject to what is known as instinct and are not the emotions more under control in the human? If these conditions are ruling factors, the animal world should be more subject to upset of the delicate endocrine system.

Abnormalities in gland function lead to divers pathological changes, and in some cases, as in the parathyroids, they will definitely endanger life. Yet even in the case of damage to this wonderful system, the body can in many cases accommodate itself to the changed conditions. This is especially so if the loss of the secretion is gradual, or if some exogenous material can be given for a time to make up for the temporary loss. W. F. Wenner (*American Journal of Physiology*, 75, 378, January, 1926), showed that if thyro-parathyroidectomised dogs were kept free from tetany by the continuous oral administration of strontium lactate, after about forty days the animals were able to readjust themselves to the loss and they permanently recovered.

It is said that the active principles of these glands are not inactivated by boiling. Now, it is a well-known fact that most of these glandular products are useless if given by the mouth. The gastric acid is supposed to inactivate them. It seems strange that about 1 per cent. HCl can render them inactive, and yet boiling is harmless. What is the explanation of this phenomenon?

In human medicine and in experimental animals it is a well-known fact that the pituitary influences growth. Has Professor Smythe ever seen any of the effects of hypertrophy of this gland in horses? I would suggest that an examination of some of our great big, ungainly, elephant-like cart-horses might be interesting. If the anterior lobe can do what he claims, and if we could control its functional activity in some way, we could nearly make horses to measure. Here is a great field for some enterprising veterinary surgeon. (Laughter.) Again, in atrophy of the anterior lobe one gets obesity, a slowing of the circulation and a lethargic temperament. Is there any connection between this condition and the fat, sluggish, gummy-legged horse, the horse described by the veterinary surgeon as being of a "lymphatic type?"

Does Professor Smythe mean that the animal about to hibernate develops a tumour or swelling in its pituitary gland?

Pituitrin is obtained from the posterior lobe and Professor Smythe recommends its use in dystokia in a very loose manner. To my mind, it is a drug which has to be used with the utmost discretion and not unless the following conditions are fulfilled:—

(1) No pelvic contraction.
(2) The os uteri is well opened.
(3) No gross abnormality of the fœtus.

In an exhausted uterus, I think, *i.e.*, if the membranes are intact, that it would be better treatment to give some sedative and let a little rest improve conditions before applying such a drastic remedy.

Pituitrin will not excite uterine contraction before labour has begun. It certainly renders the uterine wall more sensitive, but it cannot be used to induce labour. It is most useful in *post-partum* hæmorrhage, in surgical

shock, and in ileus or paralysis of the bowel such as occurs after abdominal operations.

Has Professor Smythe seen a case of tetany in a domestic animal which was due to some parathyroid defect other than extirpation; and what are the many pathological conditions met with in clinical medicine which are influenced by the effect of the parathyroids on the calcium content of the blood?

With regard to the thyroid gland, are any of the pathological conditions associated with this gland, other than cretinism, common in veterinary practice? Has Professor Smythe ever seen a case of myxœdema, or Graves' disease, in clinical medicine? If so, are the symptoms analogous to those seen in human practice? If the band of white sclerotic showing round the corneal rim indicates exophthalmos, then cows, Pekingese dogs and bad-tempered horses all have this disease.

Focal sepsis has an influence on thyroid disease. Are there any particular sites in animals for this sepsis, as in the human tonsil?

Loss of hair and various skin diseases are supposed to be influenced by hypothyroidism. Is there any association between a condition of hypothyroidism and the baldness seen in Manchester terriers?

In the human animal thyroid defects seem to run in families; there is, as it were, an inherited predisposition; is there any evidence that such is the case in animals?

With reference to the supra renals, it is interesting to note that as long ago as 1563, Eustachius, the well-known anatomist gave an account of these glands, complete with illustrations. They were called the "Glandulæ or Capsulæ renales Eustachii."

It is also interesting to note that Blaine, our own anatomist, in his book (about 1800), states that these glands may be absent in the horse—a rather peculiar observation in an otherwise exact observer. Vesalius (1642); Fallopius (1606) and Fabricus, in 1738, all noted the presence of these glands.

There is no doubt that adrenalin increases the activity or intensifies the action of local anæsthetics. It also reduces toxicity. It probably acts by preventing absorption and local dilution.

The use of adrenalin as a restorative after $CHCl_3$ is open to some question. Swale Vincent says that cats under light $CHCl_3$ anæsthesia are peculiarly liable to collapse; in deep anæsthesia it is of great use. Dr. Symes, of the Royal Veterinary College, agrees with this view.

The use of adrenalin in asthma is remarkably efficacious in cutting short paroxysms, but its indiscriminate use in lung affections is to be avoided, for there is grave danger of œdema of the lungs ensuing.

I have personally found adrenalin extremely useful in early laminitis, and in the treatment of congested mucous membranes, particularly those of the eye. It has been recommended by clinicians, in cases of poisoning, particularly phosphorus and choral cases, as a heart stimulant. It was recommended by Jona as a useful drug to give *per ovem* to diminish the absorption of non-corrosive poisons, *i.e.*, strychnine, aconite and cyanide. It has also been used in dropsical conditions associated with serous membranes, as in pleurisy and ascites. I have used it in one case of ascites (℥i of 1 in 100[c]) in a dog, but observed no marked beneficial effect.

With reference to the testicles, Professor Smythe has covered the ground which has led to the present state of our knowledge. The association of the testicles with rejuvenation has been one of the principal causes of the invasion of the province of the organo-therapeutist by the charlatan, with his exaggerated claims. There seems to be no doubt that the testicles and ovaries have definite internal secretions, and further that these secretions can and do influence, not only the growth of the particular animal, but that they are capable of conferring certain specific sexual characters upon animals of the opposite sex.

The way in which grafts of these organs can completely change the character of an animal and even influence the growth of hair or wool is remarkable. I have no doubt that when these things are better understood they will be of great value to the veterinarian.

It has been interesting to read, recently, reports from one of our own members, *viz.*, Mr. Male, who has, I understand, conducted a number of grafting experiments. I hope that he will give us further news, for it is good to get direct veterinary evidence.

A commission has recently been investigating Voronoff's experiments on Algerian sheep, with regard, I believe, to increasing the wool output. If Voronoff's claims are substantiated the whole system of sheep farming may be changed. [A summary of the report of this Commission appears this week.—Ed.]

The study of the ovary and corpus luteum is in its infancy, although many striking facts have already been established. The effects of the internal secretions of these structures on the uterus and mammary gland, etc., make a wonderful study, and here we may have the ways and means of checking some of the losses attributed to sterility, abortion and their attendant evils.

Deubler and Barnes' experiment, quoted by Professor Smythe, is of especial interest to the veterinarian, if the results given can be confirmed. Here we have a method such as any practitioner could employ.

The effects of placental extracts, as quoted by Professor Smythe, are interesting in their relation to the growth of the offspring and lactation. This is new knowledge to me. It has long been known that the placenta, when ingested, has a beneficial effect upon uterine contraction after parturition and no doubt this explains the custom shown by certain species, *i.e.*, of eating their placenta.

I would like to ask Professor Smythe if the temperamental changes in animals which are associated with developmental and pathological changes in the gonads are in any way due to or connected with hormonic derangement. Has Telegony any association?

In Professor Smythe's paper I see very little account of:

(1) Dosage, cost and methods of administration.

(2) Physiological standardisation. Does the essayist consider these points of no interest? To my mind, they are some of the most important points for the practitioner.

Gentlemen, I am sorry for keeping you so long and I am afraid that I have not done justice to my colleague's paper. However, the subject is so vast that my greatest difficulties were to know where to start and where to leave off. (Applause.)

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I am indebted to the above for much interesting material.

MR. MALE'S GRAFTING EXPERIMENTS.

Mr. G. P. MALE: I do not wish to go into the scientific arguments which my learned friends have raised, but perhaps I can give you some interesting cases which have actually occurred in my practice.

I was very encouraged, some little time ago, with the result of one of the first cases I had, in a bitch which had had two litters of puppies and which, from 1923—6, had had no more puppies, with irregular periods of heat and later none at all. She got very lethargic and fat and like an old bitch. I grafted some ovaries into her and she changed her character entirely, running about and becoming full of animation. She had a normal heat, was mated and had three very nice puppies after that long interval. The owner brought that bitch to the Royal Counties meeting at Reading, and the members present were able to ask him any question, so I do not think there is any element of doubt about the result.

The next case I had was a boar, which was the brother of a champion and, of course, they were very anxious to breed from him. He would serve the sows, but could beget no pigs, being tried for some time, until he was over two years of age. I have grafted some testicles into him and the first sow with which he was mated proved in pig and they are continuing to use him, so apparently that experiment was successful. (Applause.)

Then I had a very valuable Red Poll bull that had an injury to one of his testicles and lost all his vigour, appearing to be quite useless. I grafted him and he became able to reproduce his kind and then he was sold.

Then another case, which was suggested by Voronoff's experiments on rats, was a pet dog showing all the signs of senile decay. He was about twelve years' old, was grey in the muzzle and very stiff and decrepit. The owners were very fond of this dog and they thought they would like him rejuvenated. We grafted him with a pair of testicles and he showed all the signs of being much better for the operation. He lost some of the greyness of his muzzle, began to play about, and was like a dog of about five years of age. That was eighteen months ago and he is still going strong. (Applause.)

These cases encouraged me to go on—(hear, hear)—and I have operated upon all species of domestic animals and although sufficient time has not elapsed in some of them for me to say what the results will be, so far they have been most successful.

I agree with Professor McCunn that we must not look upon this grafting operation as a "cure-all," and that we should be very careful in selecting the case, because I do feel that in certain cases it would prove unsuccessful. For instance, cases of sterility due to metritis, salpingitis or diseases of the os uteri.

The operation would probably be beneficial in old bulls and rams. I had one case in a very aged ram which produced the most wonderful lambs. They wished to continue using him for breeding, but he showed no inclination for service. I grafted him, but do not yet know the result.

Of course mares go on breeding for a very long time and I have known one have twenty foals. It is especially in old bitches that it should be useful. Then, in cases of dys-functioning of the ovaries where periods are abnormal or where there is a cessation of œstrum, grafting of ovaries should prove very successful. There is one case I had some years ago where a mare called "Spartan Girl," a thoroughbred, did not come into season the whole of one year, and in the Spring of the next year I treated her ovaries (before the grafting was thought of, by me at any rate) and irrigated the uterus and she conceived the first time she was mated and since then has only conceived after treatment. If we had done the grafting operation, very possibly we should have given the credit to that, so one must not claim that grafting is the only method of treating such cases.

In the case of stallions with a very small percentage of foals possibly it might do good; for example, "The Tetrarch"—whose percentage of foals was very small indeed. I think if his testicles had been stimulated by grafting, that he might have been of much more use at stud and that would have been a very great asset to thoroughbred bredeers.

There are other conditions in which one would imagine that grafting would have beneficial results. Cows and mares that have cystic ovaries might benefit and I have operated on several for this purpose. I think Professor Smythe quoted someone as saying that, after operation, these cysts were absorbed and the ovaries functioned properly. Probably the stimulation of grafting might also have a good effect in cases in which there is a delay in ovulation.

The chief thing to remember, I think, in doing these operations, is the speed with which they must be done; that is, there should be no delay in grafting after the organ is removed, and transplanting into the other animal, and of course, great care must be taken throughout in regard to antiseptic precautions. I am experimenting with different positions for operating; I notice that Langdon Brown and Voronoff advise that testicles should be grafted on the tunica vaginalis. I should rather doubt the wisdom of that, because sometimes a swelling takes place at the seat of the operation, the gonad acting as a foreign body for a few days. Some of them produce no swelling at all, but others do, and if you graft a testicle there I think you would probably have orchitis, and certainly it would be a position which would be very easy to get infected.

I am also experimenting upon whether to graft the whole or part of the organs, and that is rather interesting; also, as to the age of the animal from which the organs are taken. I would like the opinion of Professor Smythe as to that—whether animals can be used which have not reached the age of puberty: I would like to know if he has any statistics as to the age at which one can use an animal. I have tried to employ animals that have reached the age of puberty or one very near to that age, and I have tried to avoid old animals because I think that probably the graft would not be as good. (Applause.)

Major HAMILTON KIRK: I must congratulate the essayist upon his paper, for I well know what work is entailed in the compilation of so many theories and facts in so long a treatise. I believe there are still a great many confirmed sceptics in the veterinary profession over the question of the value of endocrine products, and I would like to mention some of the reasons for this scepticism. In the first place, hormone therapy is very young and there admittedly still remains much to be learned. Clinical trial and recorded observation, however, is one of the finest teachers, and if we all adopt the incredulous view, we learn nothing. Ridicule has been cast upon gland therapy because many people have selected a number of hormones, placed them together in one prescription, and given them to animals for the definite purpose of curing their complaints. This pluriglandular medication has been called the "hit or miss" method. But it is not so stupid as many of its critics have sought to prove.

From the numerous experiments which have been made, we know that there is a close relationship between the internal secretions of the pancreas and thyroid. They oppose one another; and it seems to be established that

in hyperthyroidism the function of the pancreas is depressed and glycosuria is easily brought about. On the other hand, in atrophy or hyperplasia of the thyroid gland, the pancreatic powers are increased, and animals suffering from these disorders can take large quantities of glucose without the slightest glycosuria (Harrower). From a consideration of these facts the principle of multi-gland therapy owes its origin. Probably no better example of the value of combining one or more glands can be quoted than that in which thyroid is given along with whole pituitary for obesity. By this means much larger doses of thyroid can be withstood without inducing tachycardia, etc., than would otherwise be the case, as pituitary exerts a definite inhibitory action. Although the system of pluriglandular medication may at first appear to be somewhat of an empirical nature, it must be admitted from perusal of the literature that many of the results obtained have been little short of wonderful. Thus, if explanations as to the why and wherefore are, for the time being, not forthcoming, there still seems every justification for its continuance. Only last week you saw Major Gallie's report of the total cure of paralysis in a cat from the use of four glandular extracts; and this when the paralysis had existed four months before he got the case.

I myself use combinations of glands with gratifying success in fat and asthmatical dogs and cats, bitches with amenorrhœa, and for neurasthenia in both animals. There are probably numerous Fellows in this room who could speak in like terms.

The efficacy of gland therapy is dependant upon many factors, chief of which perhaps are the method of administration, the dosage and length of treatment, and the meticulous care with which manufacturers make up their products. So far as the first point is concerned, oral administration is not considered to be the ideal method except in the case of a very few of the secretions. The ready response of the organism to oral thyroid therapy led to the hope that all glandular extracts would be equally accommodating. That the hope was disappointed was due to the fact that, alone among the endocrines, the thyroid had a communication with the gastro-intestinal tract in certain of the lower animals, so that its activities were not impaired by the digestive juices. Parathyroid appears to be effective when given by the mouth, but most of the other extracts should be given hypodermically or intramuscularly in order that they may escape the risk of destruction by digestive juices. To do justice to the treatment and to one's reputation, these more certain methods of administration should undoubtedly be chosen whenever possible except in the case of thyroid medication.

Then as regards length of treatment, almost all pronounced outspoken incretory disorders develop slowly and it should not be expected that specific gland administration will correct these abnormalities overnight. The unfortunately too common practice of prescribing a two week's supply of gland tablets and expecting positive achievements within such very brief periods is unreasonable. Nothing can be expected from their haphazard administration, usually in inadequate dosage, over a few weeks' time. Not even thyroid extract will prove efficacious under such conditions. Patience in organo therapy is absolutely essential. I repeat that the casual prescription of a dozen or two gland tablets, of whatever kind and for whatever condition, is a waste of time and money. It accomplishes nothing. The animal's owner is disappointed, the veterinarian loses interest and the science of endocrinology is unfairly condemned.

The quantities given will vary in accordance with circumstances, such as whether only one dose or a prolonged course is to be given; whether the animal is infantile or adult; whether administration is to be oral or subcutaneous and finally whether desiccated or fresh gland is proposed to be employed. Disappointing results often occur in opotherapy from an eminently avoidable cause, the very existence of which appears to be unknown to a surprising number of practitioners. Manufacturers present endocrine substances in two forms, the fresh gland and the dried or desiccated gland. The difference in strength of active substance between these two forms is very considerable, and unless the prescriber is careful to indicate which form he desires the animal to have, the dispenser is obliged to guess; as some chemists guess one way and others another way, it is not surprising to find that very contradictory results are often obtained. There are startling differences in the two forms, and it should be observed that there is no ratio between the strength of the fresh and the dried as between the various products. Where one part of desiccated pituitary is equal to four parts of fresh gland, one part of dried parathyroid is equal to 10 parts of the fresh. The necessity for precision is therefore very urgent, and lack of it has been responsible for an enormous number of failures and excesses which ought never to have occurred. Perhaps these factors to which I have called attention have never weighed very heavily in the mind of the opener of this discussion, and their neglect may have led him to maintain the scepticism which he openly evinces.

Professor Smythe tells us that hormones are fairly easily destroyed by boiling. I think this is incorrect, for a characteristic which distinguishes them from ferments is that they are not destroyed by boiling. This fact also permits of sterile solutions being prepared for subcutaneous injection.

The essayist says "the function of the anabolic group is to counteract the prolonged overaction of the katabolic group of glands in chronic infections. This overaction leads to a rapid loss of weight, &c., &c." If the katabolic group is responsible for wasting, does Professor Smythe consider that in distemper and tuberculosis there should be an extra stimulation of the anabolic group? And is it possible that administration of glandular products which stimulate this group would have a salutary effect in these diseases?

As regards the statement that both the pregnant an virgin uterus are stimulated by pituitrin, Dale has expressly observed that it has no effect upon the non-gravid uterus. Professor Smythe even contradicts himself on the last page. His mention of metritis in connection with pituitrin reminds me that I have had two specific cases of absolute cure of this disease in cats by its use, and with no other treatment. Hobday, some time ago, recorded about fourteen cases of similar cure. No reference was made by Professor Smythe to one of the important functions of thyroid extract, namely its power for the destruction of toxins. Recognising this power, a drug firm has placed a combination of thyroid and potassium permanganate upon the market, as an intestinal antiseptic for oral administration. It is called thyro-manganese.

McCarrison is quoted as saying that animals kept in dirty cages develop goitre spontaneously, and the lecturer points out that in some ways the unhygienic conditions render the iodine of the food insufficient for the needs of the body. Now according to Harrower, one of the causes of goitre is pollution of food or water by micro-organisms. If this be true, McCarrison's observations can be readily understood; but I fail to see how a dirty cage can affect the assimilation of iodine from the food, or its amount therein. Professor Smythe speculates as to whether goitre is caused by a hypo- or hyper-thyroidism. The symptoms of tachycardia would seem to suggest a *hyper*-secretion, though the alleviation of the disease by potassium iodide seems to favour *hypo*secretion.

In recording blood pressure of dogs, I would like to ask Professor Smythe what kind of cuff he uses. I have been experimenting, but have not yet found one suitable for dogs. It would be interesting if Mr. Male could tell us what period of time elapses after an ovary is grafted into a barren animal, for that animal to become useful. Also whether the hormone is specific, and if not what would happen if a cat ovary were grafted into a bitch? I have on many occasions succeeded in inducing œstrum in bitches which have been consistently missing, by giving them a pluriglandular tablet containing thyroid, whole pituitary, ovary and suprarenal. These tablets are given twice daily for a month, and many clients have spoken in high praise of them.

Mr. HENRY GRAY: I congratulate the essayist on his paper, and the opener and Mr. Male on their valuable contributions to this discussion.

I have seen in the human subject excellent results from endocrine treatment, especially of mxyœdema, but my experience of the endocrine treatment of animals is that there is too much exaggeration.

As to the effect of thyroid on the dog, you can give him dose after dose and it will not benefit him. It will not even reduce his fat. Another thing is that there is a great difference in the anatomical structure of dogs concerning their thyroids. In many cases there is a chain of thyroids and you will at times find a thyroid in the anterior part of the chest. As to goitre, that is undoubtedly hereditary, and often congenital, and the treatment for the condition is iodine. Ever since I have been connected with the veterinary profession we have had thousands of theories and not many of them have lasted many years. When I was a student I was taught that cretinism was due to the presence of an abundance of magnesium salts in the water; now we are told it is due to lack of iodine. That is only assumption. When we come to the action of pituitrin, I have tried it on many cases of absolute uterine inertia and it has had not the least effect. It is no use our quoting results until we have had repeated successes, especially when all other treatments have failed. I would like to ask Mr. Male, has he followed up the offspring of these engrafted animals? Has he found that their offspring have become sterile in the same way? Because what is the use of propagating an inhereditary defect? Sterility is mainly due to heredity and if you are not going to do any good by engrafting after one generation I do not see the value of it, except from a sentimental point of view.

Professor G. H. WOOLDRIDGE: I do not wish to take part in the discussion, but one statement made by Mr. Gray intrigues me. He says sterility is inherited. I would like to know how an animal could be born if either the father or the mother was sterile? (Laughter.)

Mr. GRAY: Sterility is very common in the offspring of some animals. They are not prolific.

Mr. W. PERRYMAN: This is a subject I was rather going into at the time when I heard that Professor Smythe was going to give his paper, and I congratulate him on the production of the essay he has brought before us. It is a subject so vast that it is, as Professor McCunn has said, impossible to deal with it at all adequately at a meeting like this, and I think the only way to do so is by the writing of papers in its discussion. We are entirely indebted to the medical profession for the study of organotherapy; so far as I can gather, there is practically no original investigation by veterinary surgeons, and if nothing else comes of this discussion I think it will have a tendency to stimulate investigation on certain lines as far as veterinary work is concerned. To my mind, the chief thing at a meeting like this is to try and get at the study of the various endocrine glands.

I believe the word "endocrine" is applied to some of the glands with ducts, like the pancreas or the generative organs. I should have liked to have heard a little more from Professor Smythe with reference to the thymus and the pancreas, particularly the latter, as I think an account of recent investigations concerning that gland would have been very interesting.

So far as I can gather, the experimental physiologists have divided the glands into two groups, the anabolic and the katabolic, and I think the katabolic group particularly will interest the veterinary surgeon, comprising as it does the adrenals, the pituitary and the sexual organs. As to the thyroid, that is a promoter of growth and metabolism generally and on that account is likely to become of great interest to the members of our profession. The parathyroids control calcium quantity and, when deficient, tetany is produced. One would like to know, in this connection, whether the administration of parathyroid preparations have been proved to have any bearing on the treatment of rickets.

As to the adrenals and pituitary, I think they should interest us more. It is recognised, I think, that the hormone of the adrenals is a general stimulant to the sympathetic nervous system for the giving forth of energy for extreme conditions, and that the cortex of the adrenal is the chief organ as far as the masculine element is concerned. The cortex is held to be particularly well developed in animals of a pugnacious character, and in animals of a more timid disposition it is not so big. This seems to be bound up with the development of the testicle. I think that veterinary surgeons should verify these statements; it would not, for example, be difficult for them to compare the adrenals of the ox with those of more ferocious animals; the adrenals have a definite action on the reproductive organs, especially the ovaries. I should like to know if there is any connection between the ovary and the adrenal in the case of mares that are of a vicious temperament. Again, we are told that the cortex of the adrenal has a controlling influence over the ovary and that when the ovary is diseased the animal assumes male characteristics. I think some knowledge may be gained in the case of castrated animals—what influence the castration of the animal would have on the adrenals.

As regards the pituitary, that has influence for growth and metabolism and we are told that where in excess you get gigantism and acromegaly. I do not suppose we ever see much of that in animals, but one speaker has asked whether the pituitary gland should not be investigated in the case of excessively big animals. It is proved, I think fairly satisfactorily to the medical world, that in the case of disease or removal of the generative organs the pituitary gland is greatly enlarged. If that is so, I think it would easily be demonstrated whether geldings really have a larger pituitary gland than the stallion, because where the sexual organs have been removed from human beings, as in Eastern countries, where the eunuch is produced by castration, it is said that his pituitary is exceedingly big as compared with that of other persons.

Professor Smythe mentioned that removing the testicles in the human being was done with the idea of producing excessively big men. I believe it is characteristic of castracted humans for them to be very timid, so I do not think that excessive size would be of much value. As to the action of these preparations, I have used pituitrin, and I think most of us are agreed that it has a beneficial effect on the uterus: I think in the case of difficult parturition it is certainly useful. I use adrenalin freely and I can speak in the highest manner of its action on mucous surfaces. I use it specially in conjunctivitis, and I have also found it of value in balanitis. In spite of the fact that the endocrine products are supposed to be broken down in the stomach, I have given adrenalin internally in diarrhœa and dysentery and I have seen very good results from its use in that way. I have also given it internally with good effect in accidents, for it has a very stimulating effect on animals suffering from shock.

After such a paper as we have had it would be helpful if we could get one of our professors to give us a paper on vitamins. That would be of value from the veterinary point of view as giving us the aid of fresh, up-to-date treatment in general practice (Applause.)

Dr. TOM HARE: I am sorry to intervene at this moment, especially as I fear that it is rather an unpleasant matter that I have to bring forward, but I think, with the permission of yourself, Sir, and members, that you will find that intervention is necessary.

Professor Smythe, in his paper states, discussing the changes in the thyroid, that "although exophthalmos is not common, one does meet with animals with bulging eyes, and with an easily visible band of sclerotic showing around the corneal rim and through widened palpebral fissures—one dog we are at present treating is showing this condition. The other symptoms are nervousness, tachycardia, pulse 150, tremor, high blood pressure; the thyroids are only slightly enlarged. An interesting feature is the marked decalcification of the bones of the face."

The reason for my intervention is this—though I regret very deeply to have to make this statement in public—

that I must say that I claim that that description originated from myself.

On December 19th last, Professor Smythe came into my laboratory with the specimen of the thyroid which is shown here at this meeting. He brought it in to me to examine and report upon for him. When he had finished talking to me about this thyroid, I asked him if he would give me some help in some researches I have been conducting for the past two or three years. I explained to him that there is a condition in the dog in which you get considerable decalcification of the bones of the face, a condition which Mr. Williams showed to this Society on December 1st. I set about the research on that disease and I told Professor Smythe that I was very anxious to get some more live cases—I did not want them for *post-mortem* purposes. My reasons for this are that my work has led me to certain conclusions and they, I think, will be of great value to this profession, but I wanted to control my observations. I asked his help and I told him the whole of the conditions and that I wished to find out if this condition is associated with exophthalmic goitre. I do not lay claim to the fact that I was able to observe exophthalmos, I lay claim to having been the first to demonstrate that syndrome. I demonstrated that two years ago to a few veterinary surgeons who were interested in my research and promised to help, in Liverpool.

Before this paper of mine comes out, in association with Dr. Roberts, this statement here at present claims priority, and that, Sir, is rather a serious matter for me and for my colleague. I told all this to Professor Smythe in confidence; I asked him, in confidence, to help me.

I am sorry to have to say this to a colleague in public, but I do feel that Professor Smythe might have asked me before he thought of including this. Furthermore, after hearing his paper the other night, I begged of him not to publish this paragraph, but apparently he has not seen fit to accede to my request. I must ask that it be recorded that I publicly claim priority for this statement.

### Professor Smythe's Reply.

Professor A. R. Smythe: I should like to thank you all for the attentive hearing you gave me when I read my paper and also Professor McCunn for the trouble he has taken in opening the discussion upon it, perhaps more especially as when the discussion was adjourned he was left in the position of really having to read a paper upon a subject from which the most salient features had been already extracted.

Professor McCunn has taken me to task for adopting Starling's terminology by describing these internal secretions as "hormones," on the ground that that term signifies an exciting substance, whereas some of these secretions have an inhibitory influence. He suggests, therefore, that I should, like him, follow Schafer, who calls the inhibitory substances "chalones" and groups the two types, because of their drug-like action, under the term "autocoid substances." But the term "autocoid substances" is subject to a good deal of criticism, in common with most other terms, and personally I do not agree with it.

Professor McCunn mentions instinctive behaviour and emotional life, and he views instinctive behaviour as being the more important of the two. I regard emotional life as being far more important; I think the emotional instincts of man are far more highly developed than the ordinary instincts of animals. This is, however, a general rule and there may be exceptions.

In dogs in which the thyroids and parathyroids have been removed, Professor McCunn goes on to say, freedom from tetany has been maintained (according to Wenner), by the continuous oral administration of strontium lactate, and that after about forty days the animals were able to readjust themselves to the loss and they permanently recovered. I think we want to be careful to remember the fact that supplementary thyroid and possibly parathyroid tissue may exist. It is known to exist in people and it undoubtedly possesses the power of rejuvenation.

Professor McCunn then goes on to speak about hypertrophy of the pituitary in horses and suggests that we might be able to control size of breed and so on. No doubt the pituitary does play a big part in the size of animals, but I think size is inherited and is not controlled either exclusively from within or from without. For instance, if one takes the Shire horses from Wiltshire or Lincolnshire and imports them into Cornwall, although they breed true to type, they are very much smaller. External influences such as the lime content of water and a chalky soil undoubtedly play a big part; one might also refer to climatic factors: the influence of the American climate upon immigrants is well-known.

In atrophy of the posterior lobe of the pituitary, one gets obesity, and it is suggested that horses of the gummy-legged lymphatic type may be so affected. I disagree. I think that the thyroid may possibly have something to do with this condition as a stimulant of metabolism, but I doubt very much whether the pituitary does. My remarks on the use of pituitary in connection with dystokia are referred to as being of a loose nature. As a matter of fact, I was very careful in my wording and that article expresses what I meant to say on the subject.

Regarding the subject of tetany, it is a very involved one and one which we know very little about. Clinically, I am inclined to think that the condition is more common than we realise, but until we have evidence to show deficiency of calcium in the blood and tissues in general, I do not see that we can be very definite on the subject; the eclampsia of bitches may possibly be due to lime deficiency and cases have been recorded in pigs associated with rickets. The fits of young dogs may in some cases be associated with tetany, I think. Lime deficiency is known to occur in albuminuria and also in toxic processes. In osteomalacia, neurotropic disturbances are thought to be at work and lime deficiency also occurs; the same thing occurs in connection with ovarian irregularities in women. Further into this subject I do not think I can go to-night, as it is too involved.

Professor McCunn asks whether cases of myxœdema, or Graves' disease, are observed in clinical medicine, and, if so, whether the symptoms are analogous to those seen in in human practice. Graves' disease, undoubtedly, or something simulating that condition, in such cases, has been recorded in quite a number of animals. Myxœdema I am not quite so certain about; I think it probably occurs but that we do not recognise the condition. It seems that Professor McCunn rather misunderstands my meaning about the band of white sclerotic showing round the corneal rim. I am prepared to admit that some horses do show a white band around the cornea, but in dogs it is an entirely different condition. The eyes do bulge to some extent and one does see a striking line of sclerotic showing around rim of the cornea.

As to any particular sites for focal sepsis as a cause of thyroid disease, no doubt alimentary toxœmia plays a very big part; there may be other centres. Professor McCunn talks about hypothyroidism in connection with baldness, especially in Manchester terriers, I quite agree; the condition is also met with in Chows. As to inherited predisposition to this condition, you have heard what Mr. Gray has to say. I have met with whole litters of affected puppies, and I have rather regarded it as being due to some deficiency in the mother—avitaminosis, probably.

In regard to the use of adrenalin as a restorative after chloroform, I think Professor McCunn and I are more or less agreed. Concerning the Voronoff experiments, I have the report of the commission here and I understand it will be published at a later date in the *Record*, so that we will not spend time on that now. [See elsewhere in this issue.—Ed.].

As to telegony, the subject is a difficult one and one that has been brought up, dismissed and again resuscitated. So far as I am aware, there is no scientific evidence to support the idea that there is any foundation in the theory of telegony.

I should especially like to thank Mr. Male for his contribution. (Hear, hear.) Cases of this sort really justify one

in taking any amount of trouble. Mr. Male asks the most suitable age for obtaining tissue for purposes of grafting. Langdon Brown records the use of testicular grafts from children affected with ectopia testis. In Voronoff's report "the ram which is to supply the testes should not be less than eighteen months old, and better results are claimed with rams of 2—2½ years of age. In the case of rejuvenation of the decrepit bull it would appear that testes from a vigorous animal three years of age are likely to be most satisfactory."

The crux of the question may be boiled down to—does the graft live, or is it simply a case of the graft atrophying and the beneficial result being due to its contained hormone? If it is due to the contained hormone, then we should use the graft from an adult animal. If the graft lives and goes on living and performing its normal function, such as it would in the whole testicle, then I think the testicle of a young animal might be equally good. That question has yet to be answered satisfactorily, however. Apparently, the graft does not live for any great length of time and in that case the good may be due to the contained hormone.

Major Kirk gave us a little dissertation in addition to asking a number of questions. (Laughter.) He queries my statement that hormones are fairly easily destroyed by boiling. I am quite aware that books state that they can be boiled with impunity. He asked me an intricate question about the interaction of the anabolic and the katabolic groups of glands. I do not think that the administration of glandular products which stimulate the anabolic group would have a salutary effect in acute distemper because they would not have time to operate. I think the katabolic group gains the ascendancy and one also has to bear in mind that various other factors are at work. In convalescence, when the pathological processes are slowed down, they may be helpful.

As to the action of pituitrin on the uterus, Dale states that these extracts act by increasing the sensitivity of the uterine muscle to normal stimuli rather than by directly exciting it. This view is also held by Bell. Major Kirk says I contradict myself; I know there is a very slight discrepancy in the statement about pituitrin, but the explanation lies in the fact that I am expressing the views of two different observers. I regret I omitted to state the fact that the thyroid destroys toxins; no doubt it is a very important action. Thyroid has been used for rheumatism, partially with this object. Major Kirk cannot see that dirty cages and iodine insufficiency are associated. In dirt there is organic and inorganic matter which interact with the iodine and so form insoluble combinations so that the iodine cannot be assimilated.

Replying to Mr. Gray, in the *Lancet* of April 30th, 1927, a form of goitre was written about, and photographs of sections were shown of goitre arising from avitaminosis. When over 60 per cent. of white flour was allowed in the diet combined with a deficiency of vitamines, but an adequate supply of iodine, goitre arose. There is a good deal of evidence to show that vitamin-deficiency does play a big part in the production of goitre. As to goitre occurring in calcium districts, I think that once again the iodine is eliminated by combination, an insoluble compound being formed. Mr. Perryman asked me about the treatment of rickets and the effect of parathyroid extract. I do not think rickets is at all hard to treat or to cure. Moreover, as I stated in my paper, if a parathyroidectomised animal is fed on a milk diet it will show no symptoms of tetany unless the milk is withdrawn. So in the treatment of rickets I would give milk and save the parathyroid—as the former is far cheaper.

There is a good deal of evidence showing that the adrenal cortex is well developed in pugnacious animals and is bound up with the development of the testicles.

It is well known that the two interact. Mr. Perryman speaks about the cortex of the adrenal and certain diseases involving the cortex, the female and the male generative organs. That is an interesting point, but I do not think we know anything about such conditions. Whether geldings have larger pituitaries than stallions I am not prepared to say.

As to the remarks of Dr. Hare, as he is a colleague of mine I should prefer to refrain from saying anything which might lead to friction.

Knowing that Dr. Hare was interested in this condition, out of courtesy I sent for him. This dog was also seen by Principal Hobday and Professor Wooldridge—by the latter gentleman on two occasions. The fact that Dr. Hare is interested in this type of case is no reason why I should be precluded from presenting it in my paper.

The symptoms he mentioned are nearly all given in books. I am not prepared to admit altogether what Dr. Hare has said, but I am prepared to admit a certain amount of it. He did tell me he was interested in this type of case and I think he said he had records of two. But he has adopted an entirely wrong attitude and one which I rather resent.

I do not think I have anything more to say, gentlemen, except to thank you again for your very attentive hearing.

Dr. HARE: Might I be permitted to reply to that?

Professor WOOLDRIDGE: I ask for a ruling from the chair as to whether this matter should be pursued further—as a point of order.

The PRESIDENT (Captain W. K. Townson): I do not think we can permit it, Dr. Hare. I agree with Professor Wooldridge that, on a point of order, it is inadmissable.

Dr. HARE: You insist that it is a point of order?

The PRESIDENT: Yes.

The PRESIDENT: I think our thanks are due to Professor Smythe for bringing before us such an instructive and interesting paper. I am sure it has entailed endless work and study and it is very good of him. (Applause.) I should also like to thank Professor McCunn for the very able way in which he opened the discussion. (Renewed Applause.)

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## Mis-statements Concerning the Profession.

THE PROCESS OF CORRECTION.

At the request of the Organising Committee of the N.V.M.A., we publish below two instances of recent efforts which have been made to correct in the lay press mis-statements appearing therein which affect the veterinary profession.

We would take this opportunity of reminding our readers that the Organising Committee, through its Sub-Committee appointed for the purpose, invites members to forward for their consideration, with a view to action, publications containing gross mis-statements concerning the profession.

The following letter appeared in the *Gloucestershire Echo* of 7th April, 1928:—

### The Duties of Sanitary Inspectors.

TO THE EDITOR OF THE "ECHO."

Sir,—My attention has been called to the report appearing in your issue of April 4th of an address to Cheltenham Rotarians on the subject "The Watchman," given by Mr. F. R. Jefford, the Borough Sanitary Inspector. In the course of his address, Mr. Jefford is reported to have said:—

> "The various subjects are too numerous and detailed, and after mentioning the duties entailed, Mr. Jefford said added responsibilities as regards meat and food inspection made increased cost for inspectors to train themselves in a highly technical subject. Before sanitary inspectors could qualify as meat and other food inspectors they had to possess a good working knowledge of comparative anatomy, physiology, and pathology of animals, and also in order to combat successfully the opposition occasionally encountered when veterinary surgeons were engaged to oppose their public duties."

I should like to point out, for the information of your readers, that the knowledge of comparative anatomy, physiology, and pathology of animals, possessed by a

sanitary inspector who sits for the meat inspector's certificate of the Royal Sanitary Institute is quite elementary compared with that required of the holder of the diploma of the Royal College of Veterinary Surgeons who fills the position of expert meat inspector. Moreover, in all cases such knowledge as the sanitary inspector does possess is acquired under a qualified veterinary surgeon, and, further, all candidates for this certificate are examined by qualified veterinary surgeons who are considered by the Council of the Royal Sanitary Institute to be the competent authorities on such matters.

Therefore, while it may be true that a sanitary meat inspector possesses a sufficient working knowledge to enable him to recognise abnormalities and to interpret a definite schedule of meat inspection, there are numerous cases arising in which this knowledge is inadequate for the purpose of determining the fitness or otherwise of meat for food, and it is in such cases of doubt that the opinion of an expert meat inspector, usually a veterinary surgeon, is necessary.

Furthermore, your correspondent speaks of the knowledge in the above subjects possessed by sanitary inspectors as being necessary " in order to combat successfully the opposition occasionally encountered when veterinary surgeons were engaged to oppose their public duties." This statement is not only unfair in its implications, but must share with his preceding references to the training of sanitary inspectors the criticism that it is calculated to mislead your readers as to the real extent of the knowledge which the holder of the Royal Sanitary Institute Meat Inspector's Certificate is expected to possess.—F. KNIGHT (General Secretary of the National Veterinary Medical Association of Great Britain and Ireland).
10 Gray's Inn Square,
London, W.C.
*5th April*, 1928.

In this connection (the correction of mis-statements) the correspondence printed below, appearing in the *Luton News*, will be of interest to our readers :—

## Animals' Dispensary.

TO THE EDITOR.

Sir,—It is rarely that a philanthropic institution has commenced operations in the town with such an absence of publicity as the People's Dispensary for Sick Animals, which has opened a branch at 16 Hastings Street.

Nevertheless, all lovers of animals should be grateful that a long-felt need in the district has at last been supplied.

No charge is made for treatment, though voluntary contributions are thankfully received, and anybody however poor may bring dumb friends for treatment and advice from a trained specialist.

I write to urge Luton people to take full advantage of this beneficent work by calling and obtaining first-hand information, and by spreading the good news among their friends.—Yours, etc., STANLEY J. BENNETT.
Coombewood, Ashton Road,
Luton.
*March 19th*, 1928.

Under the same heading, the subjoined letter appeared in the following issue :—

TO THE EDITOR.

Sir,—A letter over the signature of Stanley Bennett appeared in your last issue respecting the advent of a branch of the P.D.S.A. in Luton. The writer says that readers who own animals should be grateful and elated at this news, as treatment and advice is to be given free by a " trained specialist."

I must take very strong exception to the misleading statement that trained specialists are in attendance, unless the writer's definition of a specialist is very different from the general conception of it.

I think it is a matter of common knowledge that the P.D.S.A. does not employ qualified veterinary surgeons in its dispensaries. Are we to understand, therefore, that a man who has been a kennelman, or ostler, becomes a " trained specialist " by virtue of attending a few lectures ? A trained specialist in the diagnosis and treatment of animal diseases is surely he who has spent four years in a veterinary college, passing his professional examinations year by year, finally to be passed as qualified to practice the art of medicine. The kind-hearted public who are asked to subscribe to these institutions are directly misled into believing that the attention received by sick animals is the best obtainable.

While the " best obtainable " is within easy reach, it is difficult to conceive why anything less is offered. Is it because only an animal is at stake ?

The veterinary profession, to a man, has never refused to attend the sick animal of a poor person gratis. Its members do this philanthropic work daily, and have done so from time immemorial. The National Canine Defence League and the R.S.P.C.A. have well established schemes by which very poor people may obtain qualified advice free. To obtain anything less seems to me to be a retrograde step.

So why does Mr. Bennett welcome these newcomers with a fanfare of trumpets ? Nobody can deny the right of animals to be properly treated, or would withhold the facilities to poor people for affording them the most enlightened scientific attention. Let it be properly and legitimately done, and then everybody would rejoice.—Yours faithfully, HAMILTON KIRK.
67 Wigmore Street,
Portman Square, W.1.
*March 28th*, 1928.

Mr. Bennett's rejoinder in the next issue was as follows:—

TO THE EDITOR.

Sir,—Owing to absence from Luton, I am unable to reply this week in detail to Major Kirk's letter in last week's issue. I am sending this line, however, in order that no one will imagine the matter is being allowed to drop.—Yours, etc., STANLEY J. BENNETT.
Coombewood, Ashton Road,
Luton.
*April 3rd*, 1928.

## TUBERCULOSIS IN ARMAGH.
### INSURANCE COMMITTEE'S APPEAL.

At a recent meeting of Armagh Urban Council, a resolution was read from the County Armagh Insurance Committee directing the attention of the Ministry of Home Affairs to the prevalence of bovine tuberculosis in the county, and urging that steps be taken for the inspection by a veterinary surgeon of all meat before being exposed for sale.

The Clerk thought it would be more satisfactory if the Government appointed an inspector.

Mr. F. Hughes expressed the opinion that in all these matters the officials should be appointed by the central body. All these new schemes were affecting the rates of small towns like Armagh. They had to have full or half-time officials, and salaries were inclined to increase. While they all wanted legislation to ensure pure milk and meat, still, if the Government insisted on local bodies paying for inspection, the rates would reach an intolerable height. The resolution was adopted.

Mr. H. M'Connell, veterinary inspector, reported that a great number of registered dairy premises were not kept clean, and the milk was kept in some unsuitable place. It was decided to refer the report back to the inspector with a view to the discovery of the offenders, and subsequent prosecution.

## Hams, Humanity and Humbug.

By D. J. Anthony, M.R.C.V.S., D.V.S.M.

I have been prompted to write this article by the recent appearance in various newspapers and periodicals (including *The Veterinary Record*) of an advertisement by the Royal Society for the Prevention of Cruelty to Animals, regarding the itinerary of five cured hams.

The activities of the R.S.P.C.A. are well known to all readers of this journal, and the advertisement in question is typical of the subtle propaganda carried out by that Society. The latest announcement purports to prove the superior keeping qualities of meat from animals killed by the so-called "humane" methods (*i.e.*, "shot animals")—"even when such meat is exposed to extreme atmospheric variations." To prove their contention the Society are spending huge sums—which, one would think, could far better be expended in the cause of humanity—in order to advertise the fact that five hams, said to have been cut and cured from shot pigs, were shipped all round the world, and that on return to England these lucky travellers were "unpacked, cut into halves for examination by a leading veterinary and meat inspector . . . and no portion of the meat showed any signs of deterioration, even the marrow of the thigh bones was perfectly sound."

Thus the R.S.P.C.A. imagine that they have for all time disproved the contention of the wicked and cruel bacon curers that meat from shot pigs is inferior in some way to that from pigs "stuck" by a knife in the usual way. In point of fact, for reasons to which I will refer later, this ludicrous "experiment" does not touch even upon the fringe of the question as it affects English ham and bacon curers. No doubt, the impression the advertisement is intended to convey is that it disposes of the bacon curers' objections, and that is certainly what is intended for the minds of the credulous "dear old souls" who delight in leaving large sums of money for the furtherance of animal welfare in this country. It is also the impression left on the minds of the general public who are not conversant with the time-worn arguments for and against the use of mechanical killers in the slaughtering of animals used for human food.

To those of us who have followed these arguments for some time, the R.S.P.C.A. advertisement appears to be sheer humbug. Meat traders in this country have opposed the use of mechanical killers for certain well-known reasons, and they are supported in their objections by the results of most exhaustive scientific investigations. So far as the Society's latest piece of propaganda is concerned, it deals with pigs the flesh of which is cured and sold as bacon and hams, so that we have to pay particular attention to the argument of the people who deal with pig flesh in this manner, *i.e.*, the bacon curers. The latter maintain that as pig flesh has to be kept for a considerable time before it is consumed, the question of the most effective bleeding is of paramount importance, and that therefore great care must be exercised throughout (prior to slaughter, during slaughter, as well as after), otherwise certain conditions are liable to become manifest in the tissues. These conditions are commonly termed "splashing" and "taint." It is maintained that the "splashing" (blood extravasation from the capillaries) and defective bleeding, which follow the use of the pistol, lead to so great a proportion of "taints" in the cured products as to render it impossible for ham and bacon curers in a large way of business, to adopt the shooting method without being faced with certain and ruinous losses. Especially is this so where, as in this country, the dry salt cure is used. [For details regarding this question of "splashing," readers are referred to the classical experiments of Dr. Leonard Hill, published in *The Lancet*, 1923, 11, 1382, and the further experiments of Dr. Hill and Mr. G. W. Dunkin, M.R.C.V.S., published in the *Veterinary Record*, 1924.] Bacon curers do not say, and never have said, that blood splashing is apparent to the naked eye in the carcases of *all* shot pigs. What they do say is that a very heavy percentage are so affected, and that it has been established that as many as 80 per cent. of a given number of shot pigs have been found to be "blood splashed." Furthermore, the later experiments of Professor Hill and Mr. Dunkin clearly show that even where the splashing is not apparent to the naked eye, microscopical examination has proved that the small vessels in the muscle and fat of shot pigs contain at least double the amount of blood found in the same parts of stuck animals. Here, then, is the definite and conclusive reason why high-class hams and bacon cannot be made from shot pigs. Denmark knows! In an attempt to disprove that assertion, the R.S.P.C.A. undertook the "experiment" of sending five cured hams for a trip round the world!!

Readers of *The Veterinary Record* are accustomed to digesting reports of scientific experiments, and they are well aware that if any scientist wishes to convince his confrères that he has proved some particular point, he must carry out some convincing experiments covering a large number of cases. Furthermore, that he must "lay all his cards on the table," so that others can carry out similar work and thereby establish the accuracy or otherwise of the conclusions arrived at by the first experimentist. That is an elementary point known to every student—yet, this great Society, with all its resources, can only carry out a secret experiment on the paltry number of five hams. One naturally asks, why was no opportunity afforded to those opposed to the shooting method either to see the pigs before slaughter, the condition of the hams before curing, the method of curing, their condition afterwards, or, in fact, any single phase of the experiment? We are not told how these particular hams were cured. That is, in itself, an important point, as the R.S.P.C.A. often refer to Continental countries, like Holland, as examples of places where bacon is produced from shot pigs, but they omit to inform the credulous British public that such bacon is "wet cured" stuff, that it will not keep, and that it is of very low grade on the bacon market. Wet cured bacon can, and is, dumped into this country and sold to the consumer within a fortnight of slaughter. Although precautions against "splashing" are also important in bacon so cured, yet it is obvious that where bacon undergoes a "dry cure," as in all first-class ham production, the quality of the flesh must be of the very best—one of the most important contributory factors being efficient bleeding of the carcase. A "dry cured" ham has to remain in the factory for months before it is released for sale to the retailer. Meat slaugh-

tered anyhow will not keep that length of time. It is, of course, possible to cure meats in such a way that they could not go bad ; it is possible even to " embalm " them by the use of material of sufficient strength and quantity. Buffalo flesh may be so treated and " cured " until it resembles, in texture, strips of board, and no doubt it would travel round the world, and be consumed and pronounced " good," by those who could eat it. There are ardent supporters of the shooting method ready to pronounce any meat " good " so long as it is from shot animals.

The R.S.P.C.A. advertisement tells us that on the return of the " wandering five " to Leeds they were unpacked, cut into halves, and examined by a leading veterinary and meat inspector, and were found to be quite sound. In this connection, it would be of interest if we could be informed of the method or methods adopted by the veterinarian to examine these hams. It is not sufficient to state that the hams were cut through at their thickest parts and that no portion of the meat or bone marrow showed any signs of deterioration. It is possible for hams to be so " cured " as to be totally unfit for human food, or so unpalatable as to be uneatable, and yet show no " signs of deterioration " under naked-eye examination.

The interesting point about this advertisement is that it shows a complete change of front by the R.S.P.C.A. Meat traders have all along asked for, and would welcome, a full and impartial Government investigation into all methods of slaughtering animals for human food, and the after effects upon the meat.

About five years ago the Federation of Meat Traders arranged a slaughtering demonstration at which all methods of slaughter were tried. The meat was afterwards kept under supervision of the local authority so that it could be examined by certain eminent veterinarians in the presence of representatives of the R.S.P.C.A. and various animal welfare societies, as well as meat traders, so that these people could see for themselves the effects of various slaughtering methods upon the flesh of the animals so killed. The Hon. Humane Slaughtering Adviser of the R.S.P.C.A. at the time admitted that it was the best demonstration he had attended ; he acknowledged the fairness thereof, but did not think it possible to take any part in the inspection of the meat afterwards without placing the matter before his Society first. An invitation to be represented on the committee appointed to examine the meat was extended to the R.S.P.C.A. and societies concerned, *but they declined the invitation, maintaining that, in their opinion, no useful purpose could be served by such examination.* And yet they knew that the animal flesh in question was to be used for human food, and that one of the main objects of the demonstration was to ascertain the effects, upon the flesh of the animals, of the different methods of slaughter. One is tempted to ask whether there is any relation between this surprising refusal of the Societies, and the report of the Chief Veterinary Officer at Birmingham that on final examination of the meat the portions taken from animals killed by the ordinary method were in good condition, whilst those from the shot animals were in a " decomposed and stinking condition." To many people the answer is obvious.

Now, five years later, the R.S.P.C.A. trot out this amazing advertisement, which deals with the very subject they previously did not consider of sufficient importance to bother about.

Why this change of front ? Has the R.S.P.C.A. at last come to realise that there is some truth in the contentions of the meat traders and that the scientists and others who have reported on slaughtering methods were not all strangers to the truth, as they have almost been accused of being by zealous adherents of these various so-called " humane " societies ? Is it reasonable to think that this " experiment," followed by this flood of expensive press advertising, can or will carry the slightest conviction to the minds of fair-minded people ? One rather believes that the majority of readers will prefer to rely upon results of experiments—as at Birmingham—carried out openly, publicly, and in the presence of eminent veterinary, medical and physiological investigators from all parts of the country.

Why stop at five hams ? Why not a convincing investigation on a large scale, openly carried out with, say, 5,000 hams ? A question we should like answered is : " Would the percentage of unsaleable hams from 5,000 ' shot ' pigs be any higher than that from an equal number of ' stuck ' pigs ? "

Bacon curers have never shirked full publicity for experiments on slaughtering ; they have always welcomed criticism and suggestions for improving their trade, which, after all, is a valuable agricultural aid. Moreover, this trade is heavily hampered by cut-throat competition from foreign countries where conditions governing the production of meat food are often far below those prevailing here. It is the high quality of its product that alone enables the bacon industry here to hold its own against the dumping into this country of cheap, rapidly cured, bacon and hams. Anything done to reduce the quality of the British product must, therefore, result in serious damage to the bacon industry, and in turn, to agriculture. Every practising veterinary surgeon is painfully aware of the present plight of British farming, so that there is no necessity to emphasise that point.

It is time all " humbug " was abandoned over this question of " humane slaughtering," and an impartial Government investigation carried out by competent men on a sufficiently large scale to determine once and for all time the best method to be adopted in the slaughtering of food animals, consistent with the requirements of good keeping qualities in the meat. The best method will never be found by propaganda " stunts " such as those of which the R.S.P.C.A. are so fond.

## Hail Cuts Backs of Cattle.

The *Sydney Daily Telegraph Pictorial* of January 31st, reports that in an exceptionally heavy hailstorm in the Kent Park district the hail cut great gashes in the backs of the cattle. After the storm had passed, blood was found to be oozing through the wool on the sheeps' backs.

The hailstones cut holes in the roofs almost large enough for the insertion of a man's fist.

## Foot-and-Mouth Disease.

### Argentine Meat.

The following letter in *The Times* of April 2nd, from Sir William Haldane, should be read in conjunction with the reprint from *The Times* of March 20th, of Lord Bledisloe's mission to the Argentine, and the subsequent discussion in the House of Lords, published in our issue of March 24th.

To the Editor of The Times.

Sir,—In his letter in your issue of March 24th, Lord Bledisloe takes exception to what I said in my letter in your issue of February 21st, to the effect that it is now beyond the power of the Argentine authorities to save their herds from foot-and-mouth disease. He has admitted the prevalence of the disease, but the only steps, according to him, being taken in Argentina are more thorough inspection of cattle and carcases exported, and the issue of a circular to herd owners, the terms of which he does not give. Does Lord Bledisloe intend us to believe that such trifling action on the part of the Argentines will do anything effective in eradicating the disease which our scientists describe as "the most contagious of all known diseases," and which, one reads in their Press, infects their markets, roads and railways, even their quarantine stations, and which has become so common throughout the country that the Argentines treat it as inevitable? Lord Bledisloe himself admits that for the present drastic interference by the Argentine Government in a country "wholly unused to Government control in respect of animal disease" would defeat its own object. He appears to suggest that we should meantime continue taking the risks of infection being transmitted to this country in the hope that some day public opinion in Argentina will become educated in the matter of animal health sufficiently to enable its Government to eradicate the disease.

I regret Lord Bledisloe's annoyance that I had mentioned what was published in Buenos Aires to the effect that he had promised we would accept the position for two years. He quotes the words he recollects using and I think he will agree that they were perhaps too involved for foreign listeners to interpret correctly. It is satisfactory to know that in his private conference he refused to accept the regulations for inspection adopted by the Argentine Government as adequate in the interests of this country for a two years' trial. Both Lord Bledisloe's letter and his statement in the House of Lords on March 20th leave the impression that even he is not satisfied that the Argentine Government is doing enough—though perhaps all they can without hurting their meat trade. I see the same view is still being expressed in Argentina.

The chief points brought out in the recent official statements and replies in Parliament are:—

(1) That the disease is very prevalent and now endemic in Argentina;

(2) That the disease virus remains active in the blood from either chilled or frozen carcases for 30 to 40 days, and in bone marrow for longer;

(3) That while there is no fear felt as to frozen meat there is doubt lest chilled meat carries the infection here from Argentina and other South American countries;

(4) That it is impracticable to test this so as to get direct evidence; and

(5) That our Government is meantime hoping that Argentine Government inspection of cattle and meat for export will minimise the danger of infected carcases coming to us from that country.

Our authorities appear convinced that the infection we are so seriously suffering from comes from abroad, and hitherto European countries nearest to us have been suspected, but Lord Ernle has pointed out that the disease statistics contradict the latter view. Now that we know that the disease virus is best preserved in virulent condition at low temperatures the conclusion would seem irresistible that it is brought in our vast imports of chilled beef from South American countries where the disease is so prevalent. The tests made under official supervision are confirmatory, and the statistics also point to this conclusion.

It would be most dangerous to rely on mere inspection by foreign officials whose interests must be mainly to encourage the export trade of their country, and who are as well aware as our own authorities that it will remain impossible to prove from its results any laxity in their methods or practice. It has been pointed out in Argentina how infected animals or carcases may escape the observation of even careful, expert and conscientious inspectors. Neither the Ministry nor its spokesman have given any assurance that such inspection will protect us, and it is somewhat significant that the Ministry's official statement as to the result of Lord Bledisloe's visit concludes with the intimation that our local authorities are again to be asked "vigorously to enforce" the Orders of the Ministry to prevent meat, bones, foreign meat wrappers, etc., being brought in contact with animals until sterilised.

The unfortunate results of reliance on foreign inspection have been so repeatedly and disastrously experienced that it is hardly necessary to recall them, but it is of interest that in 1898 when Argentina was importing breeding cattle from Continental countries which had the disease we warned her of the serious danger of such a course, but she insisted on continuing it, subject to inspection assurances by the foreign countries she was buying from. Within a very short time we found infected cattle in the cargoes we were accepting from Argentina in the belief that her herds were free of disease, and by 1903 we had finally to forbid any further importation of live stock from that country. Had Argentina listened to our warning, South America might have been as clear of the disease as North America is to-day.

There is an aspect of danger to which it is only right that public attention should be drawn, to whatever degree it exists, that foot-and-mouth disease is one which, occasionally at least, affects human beings. In my own limited experience I have chanced to know of cases in Britain, one or two of them with fatal result, and others with serious effect. In this country, fortunately, we have had comparatively little experience of the disease among human beings for many years, owing, no doubt, to the fact that we have taken the greatest care to crush it out. I agree with Lord Ernle that we cannot expect our farmers to tolerate the drastic measures enforced against them to prevent the spread of this devastating disease, with the losses it involves, so long as their foreign competitors are allowed to send the infection into our midst with such trifling precautions to protect us as Argentina has offered.—Yours, etc., W. S. Haldane.

Edinburgh, *March 30th*.

### Live-Stock Improvement Scheme.

The Government scheme for distributing selected bulls and boars in different parts of the country is progressing unequally, in accordance with the local conditions and appreciation of the system. It does not follow that those counties where few sires are procured are indifferent to the quality of their herds, since they may have in existence already ample opportunities for effecting what is required in other ways. It is encouraging, however, to learn of substantial progress in counties where work of this supplementary kind can be productive of real benefit. The Buckinghamshire scheme for the ensuing year marks remarkable headway, and is creditable to all concerned. There is evidence of unity of action on the part of the live-stock officer, the county organizer, the Ministry of Agriculture, the county council, and the farmers. The scheme formulated for the coming year assigns to that county twenty-two bulls and fifteen boars, arrangements that should supplement most advantageously the resources of the county in organising for the improvement of its cattle and pigs.—*The Times.*

# CLINICAL AND CASE REPORTS.

## Fatal Mucoid Obstruction of the Bladder of a Cat.*

By HAMILTON KIRK, M.R.C.V.S.

This exhibit is the bladder of an eight-year-old castrated, male, short-hair cat. It was a very heavy and obese animal, and was brought to me on Wednesday morning in a moribund condition. Its temperature was subnormal, and pulse imperceptible; it would lie in any position, perfectly still, and seemed oblivious to its surroundings or to pain. Palpation of the abdomen disclosed an exceedingly hard and distended bladder. The catheter was passed and a small quantity of blood-stained urine withdrawn. As no more could be got, I punctured the bladder with a fine trochar and canula and withdrew about another 2 ozs. of urine. Then again no more could be obtained. I was puzzled, and in view of the collapsed condition of the cat, and its age, I put it to sleep.

The bladder, on *post-mortem*, was only moderately affected with cystitis, and the cause of the non-flow of its liquid contents was found to be a considerable quantity of very viscid mucus. This material was so gelatinous that when lifted it would hang without dropping, and trembled like a jelly when shaken. This could not have been evacuated, and I fail to see how I could have treated the case successfully. I have never before seen such a condition in any dog or cat, and I have opened a great many bladders of the small animals. I also brought the penis of this cat so that Fellows could see the penial bone. These are not often seen by practitioners, I think.

## Items of Interest.

By HENRY GRAY, M.R.C.V.S.

### PUERPERAL FEVER IN THE BITCH AND RABBIT.

Bitches often succumb to puerperal fever a few days after birth. Bitch after bitch in the same establishment goes the same way; but often bitches of a different breed, although in close contact with susceptible breeds, seem immune. The affected animals give birth to their pups in an easy natural way, and in less than twenty-four hours there is a rise of temperature which is maintained until death takes place a few days later. The uterus shews lesions of congestion, inflammation or necrosis which condition is similar in both cornua.

Identically the same occurs in the rabbit and the losses from such a source are often enormous. As in the bitch, the offspring do not seem to be affected.

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### OXYGENOTHERAPY IN SHEEP APOPLEXY.

Ewes are frequently affected with an acute nervous trouble variously termed staggers, apoplexy, or strike. In the North of England inflation of the udder has been tried and, it is alleged, has given excellent results. Perhaps some of our readers who have used this agent in this malady will give us the benefit of their experience. By doing so they will not only advance the therapeutical knowledge of the profession, but gain for themselves a record in the history of our calling. Have any of our readers used the hypodermic inflation with oxygen in the treatment of braxy and other anærobic bacterial maladies? This method of treatment has been established in canine practice and is invaluable in certain skin diseases. It is an inexpensive and harmless remedy. It is worth a trial in malignant œdema or gaseous gangrene in equines, which is of somewhat frequent occurrence in certain districts. Our veterinary schools should give it an extensive trial in medical and surgical cases.

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### OMPHALITIS IN PUPPIES.

Omphalitis often occurs in puppies. There are two types of it. In one there is an abscess, containing yellowish pus, in the navel region. The opening of this abscess is followed by recovery. It may be witnessed in every member of the litter.

In the other form, suppuration takes place in the cord within the abdomen, and it generally ends in bursting into the peritoneal cavity, which is filled with a pinkish hæmorrhagic pus. Very little is noticed just before death, and it is seen mostly in puppies two or three weeks' old. Most, if not all, of the litter are affected.

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### JOINT-ILL IN PUPPIES.

I have sometimes encountered this in puppies before, or soon after, their eyes are open. It occurs principally in the larger breeds. The elbow and the stifle joints are principally affected and there is much œdema of the limb. It resembles in every respect that seen in foals, calves and lambs. The young creatures seem in other respects to be in a good condition and are well cared for by the dam, which appears to be in a healthy state.

## Technique of the Voronoff Operation for the Implantation of Testicular Grafts.*

By WM. C. MILLER, M.R.C.V.S.

### INTRODUCTION.

At the Breeding Station of the Government of Algiers, Tadmit, Dr. Voronoff, assisted by Veterinary Surgeon Bosselut, gave a demonstration of his method of operating upon sheep.

Two rams were chosen: (1) the donor of the testicular material to be implanted, and (2) the host to receive the grafts. The demonstration was of the implantation of testis grafts from a vigorous adult into a young ram prior to the onset of puberty, with the object of increasing the quality and quantity of the mutton and wool, not of the individual only, but also of his progeny.

The ram to receive the grafts is operated upon between the ages of eight and ten months for preference, and should in no case be older than one year. Two grafts are implanted on each testis, one on the lateral and one on the medial aspect. The ram which is to supply the testes should not be less than eighteen months, and better results are claimed with rams of two to two-and-a-half years of age.

* Case presented, with exhibit, at a meeting of the Central Division N.V.M.A., on March 1st, 1928.

* Reprinted as an Appendix to the Report of the Ministry of Agriculture's Representatives on the Delegation to Algeria.

In the case of rejuvenation of the decrepit bull it would appear that testes from a vigorous animal three years of age are likely to be most satisfactory.

Apart from these differences, the operation is identical in technical details both for rejuvenation and for stimulation of early maturity.

RESTRAINT.

Each animal was secured upon a table supported by trestles, and fixed in the dorsal position, the limbs and the horns being tied by ropes to suitable fixtures on the tables.

PREPARATION.

The wool on the scrotum was roughly clipped with scissors curved on the flat, and thereafter a creamy paste of barium sulphide in warm water was spread thickly over the scrotum with a spatula. This was allowed to act for from five to ten minutes. The barium sulphide is a powerful depilatory, but must be used with care. It was accordingly removed and the scrotum thoroughly washed with soap and water as soon as the fine wool had been destroyed in order to check any excoriating action on the epidermis. This leaves the operation area free from wool and grease, and obviates the need for shaving.

The animal which was to furnish the grafts for implantation was prepared first, and that which was to receive the grafts was dealt with immediately afterwards.

After the seat of operation and the surrounding areas had been cleansed and the excess water lightly dried off with cotton wool, the scrotum of each animal was painted with Tr. iod. (2½ per cent.), and sterilised Holland cloths with stitched windows were arranged over the neck of the scrotum and fixed by tissue clips. For a second time, the scrotum was swabbed with tincture of iodine of the same strength.

INSTRUMENTS.

The instruments, a list of which is given below, were sterilised in a " Gross and Barthelmy's " Formol Vapour Steriliser, together with rubber gloves, suture material, etc.

Instruments:—4 scalpels, 2 pairs tissue scissors, 20 pairs artery forceps, 2 pairs dissecting forceps, 2 pairs vulsellum forceps, 4 " Reverdin " handled needles to take No. 000 or No. 00 catgut (chromicised), of which 4 tubes of each variety were used.

MATERIALS.

Two large Holland cloths or towels with sewn windows large enough to accommodate the scrotum.

Two napkins kept in a suitable sterile receptacle.

A plentiful supply of gauze swabs, cotton wool swabs, and overalls, rubber gloves, etc., etc.

ANAESTHETIC.

No general anæsthetic or hypnotic was used (the sheep being a particularly bad subject for chloroform anæsthesia), but Novacaine solution (2 per cent. strength) was used to infiltrate the lines of incision in the scrotum of each animal (*i.e.*, that to be castrated and that to be grafted).

NOTE.—It would seem that the Algerian sheep are able to withstand handling and treatment which would be badly tolerated by sheep in Great Britain. It would be inadvisable to submit the heavier British breeds to prolonged dorsal recumbency without the use of a hypnotic, and unless twenty-four hours' fast had been enforced previous to operation, digestive derangements would be expected even after the use of a hypnotic. It is well known that asphyxia is extremely likely to result from keeping a sheep in the dorsal position for more than a few minutes. It is here suggested that sheep to be operated on in Great Britain or countries where the breeds are of British origin, should be fasted for twenty-four hours before operation, and should receive a drench of chloral hydrate and potassium bromide (4 to 7 drachms of each substance, dissolved in ½ pint of treacle water), about two hours before operation. It is further suggested that the operating table should be arranged with its head end one foot higher than its tail end, so that pressure of abdominal contents on the diaphragm may be reduced.

THE OPERATION.

The principles of the technique upon which Dr. Voronoff lays most stress are :—

(1) " Transplantation of the graft to the place which Nature intended it to occupy ;

(2) Irritation of the implantation surface by scarification and scratching in order to provoke a local congestion which will hasten the formation and growth of new capillary vessels destined for the nutrition of the graft ;

(3) Division of the grafts into thin slices to facilitate imbibition of all the cells."

STEPS OF OPERATION.

The two sheep were arranged on their tables side by side, and the receptacle with its sterile napkins was kept conveniently near to receive the testes.

1. *Castration.*—The scrotum of the first sheep was opened by a linear incision through the skin and tunica dartos, and the testicle, covered by its tunica vaginalis was exposed. The spermatic cord was infiltrated with novocaine solution, and subsequently severed, the testis being thus removed with tunica vaginalis intact. Hæmorrhage was controlled by artery forceps applied before severing the spermatic cord. The epididymis was next removed by cutting with scissors, and the testis was wrapped in the sterile napkin and placed in the receptacle until required. The second organ was similarly removed. (The two wounds in the scrotum may be sutured if thought desirable.)

2. *Preparation for Implantation.*—The skin of the scrotum was incised by a linear incision about three inches long made towards the lateral aspect of the anterior surface, and reaching down to within an inch of the tip of the scrotal pouch. It was secured by artery forceps and reflected, being separated by blunt dissection from the underlying tunica dartos and loose scrotal fascia. Hæmorrhage was controlled by pressure from artery forceps in the usual way. The tunica dartos was then secured by four pairs of artery forceps and between these an incision was made through it down to the outer surface of the tunica vaginalis, but the latter was left intact. By retraction with the artery forceps the testis, covered with its tunica vaginalis, was exposed. Using the handle of a scalpel, two pouches were then made, one to the right and one to the left of the incision, between the tunica dartos above and the tunica vaginalis below (*i.e.*, into the loose peri-vaginal fascia).

These pouches facilitate rotation of the testis about its long axis, and also enable the grafts to be accommodated in them.

*Scarification.*—Using one of the Reverdin suturing needles, the outer surface of the tunica vaginalis was thoroughly scarified until it and the peri-vaginal fascia were sufficiently injured to cause a number of tiny bleeding points to appear over an area about $1\frac{3}{4}$ inches long and $\frac{1}{2}$ inch wide, on the lateral face of the testis (*i.e.*, the area upon which the first implantation was to be made).

NOTE.—To accomplish this, the testis must be rotated on its axis, in order to bring its lateral face into the scrotal incision. This is effected by seizing its lower-most pole with vulsellum forceps, or with a pair of artery forceps—taking care not to damage the cauda of the epididymis immediately below.

The survival of the graft depends upon the thoroughness of the scarification of the outer surface of the tunica vaginalis. The local aseptic inflammation and congestion so secured facilitate the growth of capillary loops into the superimposed graft, and the exudation of serum which follows the local injury enables the graft to live by imbibition until such time as vascularisation of its substance can occur.

3. *Preparation of the Graft.*—Meanwhile, the testis had been lying wrapped in a napkin, under conditions as nearly calculated to keep it living as possible. It was then divided into two halves by a longitudinal medial incision passing through the testiculi-epididymal junction. From the anterior edge of one-half of the organ a strip of albugineous coat, about $1\frac{1}{2}$ inches long and slightly less than $\frac{1}{2}$ inch wide, was cut by a pair of scissors in such a way that about $\frac{1}{4}$ inch to $\frac{3}{8}$ inch thickness of gland tissue was included.

(It is better to cut considerably more testicular tissue than this when taking the graft, and to trim it down to the required thickness subsequently. The flat glandular surface obviously must not be greater than the scarified area already prepared on the outer surface of the tunica vaginalis.)

The testis was wrapped in its napkin and returned to the container.

4. *Implantation of the Graft.*—The piece of testicular tissue thus prepared (free from all ragged and irregular shreds, and as uniform in outline as possible) was then laid on the scarified area, and fixed by four sutures of catgut, one at each of its ends, and one on either side about the middle of its length.

An extra suture may be required if the graft does not lie in accurate apposition with the underlying surface. The use of Reverdin needles greatly facilitates the application of the graft and makes it more rapid. When suturing, care should be taken to ensure that in fixing the suture none of the numerous small peri-vaginal blood vessels is included. To tie the sutures carelessly including vessels within the loop is liable to compromise the chances of survival of a portion of the graft, through what is virtually ligation of a section of its vascular field.

Thereafter, a second graft of similar size was prepared in an identical manner, and affixed on the medial aspect of the testis, exactly opposite the first graft, by a repetition of the technique. The medial face of the testis was brought into the operation wound in the scrotum and tunica dartos by rotating the testis in the opposite direction.

5. *Closure of the wounds.*—The artery forceps holding the dartos apart were approximated—the testis having first been released and arranged in its normal position in the scrotum, with one graft on its lateral and the other on its medial face—and the wound in the dartos was closed by a continous blanket suture of catgut (No. 000). The skin edges of the scrotum were subsequently approximated and the wound closed by interrupted sutures of catgut (No. 00), (alternatively silkworm gut may be used). Finally, the wound was sealed with collodion and cotton wool.

The following notes were made as the result of questioning Dr. Voronoff and his colleagues :—

1. The second testis of the animal is treated in exactly the same manner, receiving grafts on opposite sides, and finally, the sheep is released.

2. *After-treatment.*—Wounds should cicatrise in from 10-14 days, during which time the animal should be kept under supervision, but beyond the removal of the sutures (in 10 days) when silkworm gut scrotal stitches are used, no further operative interference is required.

3. *Untoward Sequelae.*

(*a*) Suppuration through infection of the operation wound is rare. The tissues of the sheep possess very considerable powers of resistance against ordinary bacillary invasion, and with the usual aseptic precautions healing is almost invariably by "first intention." When suppuration does occur, a subcutaneous abscess results, which, however, in no way injures the testis, though it may destroy the grafts. Re-grafting may be performed subsequently.

(*b*) Necrosis of the graft may occur when :—

(i) The graft has been too large or too thick to allow of rapid vascularisation ;

(ii) The area of implantation has been insufficiently scarified ;

(iii) Blood and serum have been allowed to coagulate over the surface of the tunica vaginalis through undue delay in the fixation of the graft on the scarified area. To avoid this, the surface should be freshly scarified immediately before the apposition of the graft takes place, any coagulated blood or serum being removed previously by gauze swabs.

(iv) The grafts touch each other or are in too close proximity. It is to avoid this contingency that the grafts are placed on opposite sides of the testis.

By a careful observance of the details as given, most, if not all, of the above causes of necrosis will be avoided.

(*c*) Liquefaction and absorption may follow an attempt to implant grafts which are too small, or are too thin. When inadequate in these respects, the expected stimulus may be indefinite or wanting through insufficiency of the material introduced, even through absorption does not take place. In such cases the operation should be repeated.

# REPORT.

## Extract from Report on Dr. Serge Voronoff's Experiments on the Improvement of Livestock.

In accordance with arrangements made between the Ministry of Agriculture and Fisheries and Dr. Serge Voronoff, of the Collège de France, Paris, a delegation consisting of :—Dr. F. H. A. Marshall, Sc.D., F.R.S., Dr. A. Walton, Ph.D., Cambridge ; Dr. F. A. E. Crew, M.D., D.Sc., Ph.D., Mr. Wm. C. Miller, M.R.C.V.S., Edinburgh, visited Algeria in November, 1927, there to meet Dr. Voronoff and to examine his experimental animals and records.

This British delegation was joined at Algiers by the following representatives of other countries :—Dr. Richelet, Argentine ; Professor Moussu, M. Curasson, M. Duchoix, France ; M. Potticchea, Dr. Pettinari, Italy ; Don Miguel Echegaray Romea, Don Santos Aran, Dr. Canellas, Spain ; Professor Pardubsky, Czecho-Slovakia.

The objects of the visit were (1) to witness the application of the Voronoff method of testis-grafting to animals of agricultural importance ; (2) to examine certain animals which already had been subjected to this technique ; and (3) to examine and to report upon the claims made by Dr. Voronoff concerning the economic value of this method in the field of practical livestock breeding.

The Voronoff method of testis-grafting consists essentially in the implantation of pieces of testis taken from one male on to the surface of the testis of another male (preferably of the same species). The scrotum is opened, the surface of the exposed testis is scarified in order to evoke a mild and aseptic local inflammation and to promote the rapid formation of new blood connections between the testis and the implant, and on to this scarified area pieces of testis from another animal are stitched.

It is claimed that this additional testicular material retains its histological integrity for a considerable time and exerts a physiological action which can replace or reinforce that of the animal's own testis and so restore or increase the degree of expression of those characters of the animal which are dependent for their expression and full maintenance upon the proper functioning of the active sex-gland. Dr. Voronoff holds the opinion that not only are the *sexual* characters thus dependent upon the physiological activity of the testes, but also that these sex-glands play an all-important rôle in the maintenance of general vigour.

Dr. Voronoff has employed his technique of testis-grafting in the cases of :—

(*a*) ***The senile male whose own testes have become insufficient in their physiological activity.*** It is claimed that following upon this operative treatment the old, decrepit, and infecund male becomes "rejuvenated," that his reproductive powers are restored.

As an example of the application of this technique, the delegates were shown a rejuvenated bull Jacky.

(*b*) ***The sexually immature male whose testes have not yet profoundly affected the developing characterisation of the individual.*** It is claimed that, following upon this treatment, growth and general vigour are stimulated to a fuller expression, as evidenced by the attainment of a larger body size and a greater sexual potency, and that these characters are in part at least transmitted to the offspring. An example of this is the case of sheep examined by the delegates at Tadmit.

### Conclusions.

The claim of Dr. Voronoff to effect rejuvenation of the aged and decrepit male by the operation of testis grafting is possibly justifiable. The evidence is, however, not based upon critical experimentation. Data on the duration of the graft and its effect upon the fertility of the operated animal are at present insufficient to warrant an estimate of the economic value. It is an open question whether this method, even if or when its merits have been fully demonstrated, can become of any considerable importance in Britain. Alternative methods of extending the usefulness of valuable sires are available and might be adopted with equal advantage.

The claim of Dr. Voronoff to increase the body weight and wool clip of the ram by the operation of testis grafting applied to the immature animal is supported by the figures submitted and by the sheep shown to the delegates, but the conditions under which the experiments have been conducted, the inadequacy of the data submitted, and the methods of presentation of the data, exclude any possibility of forming a critical opinion. The direct economic advantages of the operation are negligible.

The claim of Dr. Voronoff that the improved characteristics shown by the grafted rams are transmitted to the offspring (males, females and castrates) involves the acceptance of a principle of heredity (the inheritance of acquired characteristics) which has not been substantiated in the realm of science and could only be so by appeal to the most critical and extensive research. These requisites have not been fulfilled in Dr. Voronoff's experiments. The results are capable of other explanations based upon established principles of heredity, for example, chance isolation of superior hereditary strains, aided possibly by (unconscious) selection.

Assuming, however, the validity of the claim, the economic value of increased body weight and wool clip would have to be considered not only in relation to climatic conditions and economic demands but to the increased cost of upkeep of the animals. The value of the method must also be compared with existing methods of improvement, for example, pedigree-breeding and selection, importation of superior stock, progeny tests, and the like.

Dr. Voronoff's claims have had wide publicity in the popular and agricultural press and have possibly been accepted by a section of the public for the most part unfamiliar with the usual criteria of scientific judgment For this reason and because questions of considerable scientific interest and some economic importance have been raised, it is highly desirable that the matter be put to further and more critical test in this country, where conditions are more favourable to scientific control.

The initiative displayed by the French authorities in Algeria in granting facilities to Dr. Voronoff for these experiments is to be highly commended, and the devotion of M. Trouette, Inspector of Livestock Breeding to the Government of Algeria, and his subordinates to what must, in the circumstances, have been indeed an arduous task, is worthy of our most sincere admiration.

# DIVISIONAL REPORTS.

## Central Division.

The principal feature of the well-attended meeting of the Central Veterinary Society, which was held at 10 Red Lion Square, W.C., on Thursday, March 1st, 1928, was the postponed discussion of Professor A. R. Smythe's paper, "Some Aspects of Organo-therapy in its relation to Veterinary Practice," presented at the previous meeting. Professor J. McCunn opened the discussion, which was well sustained and which is reported at the commencement of this issue of the *Record*.

The Chair was occupied by the President (Captain W. K. Townson), and there were also present Captain L. S. Balls, Mr. H. Bell, Captain R. Bennett, Messrs. W. Brown, H. E. Bywater, W. T. Ferguson, Herbert King, H. C. P. King, Major Hamilton Kirk, Mr. Henry Gray, Dr. Tom Hare, Mr. H. D. Jones, Mr. G. P. Male, Professor J. McCunn, Professor J. Macqueen, Mr. J. W. McIntosh, Mr. H. J. Parkin, Lt.-Col. J. W. Parks, Mr. W. Perryman, Lt.-Col. P. W. Dayer Smith, Professor A. R. Smythe, Messrs. A. W. Stableforth, W. N. Thompson, Capt. P. R. Thompson, Captain W. Watt, Major R. F. Wall, Messrs. A. E. Ward, F. W. Willett, J. D. Williams, Professor G. H. Wooldridge and Mr. J. F. Macdonald (Hon. Secretary).

*Visitors*: Messrs. C. Elphicke, A. A. Mackay, A. B. Orr, J. S. Steward and R. A. Willett.

The minutes of the last two meetings of the Division, having received publication in the *Record*, were taken as read and were confirmed.

### Correspondence.

(1) From Major F. Chambers, Major G. W. Dunkin, Principal F. T. G. Hobday, Captain S. J. Motton and Mr. H. L. Roberts apologising for their inability to attend the meeting.

(2) From Principal Hobday, on behalf of Mr. Gooch, of Stamford, drawing the attention of members to the Arts and Crafts Exhibition, organised by Lady Exeter, to be held at Burleigh House on May 31st, in aid of the funds of various nursing institutions and also of the Royal Veterinary College Rebuilding Fund. Members of the Central Division or their ladies were asked to send articles for the Miscellaneous Stall, all the proceeds from which would be devoted to the latter fund and for which members of the profession were to be responsible.

(3) From Dr. A. L. Sheather, stating that he had been notified by the Home Office that his request for registration under the Vivisection Act had been granted and returning thanks for the support accorded his request by the Division.

(4) From Mr. R. Black, inviting the co-operation of the Division in the proposal to tender to Captain Ross Grant, before his return to Sydney, a complimentary dinner and presentation.

In this connection, the Secretary requested members to get in touch with Mr. Black.

(5) From Mr. R. L. Cornell, stating that as he was leaving the country to take up an appointment in Tanganyika he would have to resign his membership, but that, if the Division retained members proceeding abroad on its membership list, he would appreciate the privilege.

The Secretary informed the meeting that he had intimated to Mr. Cornell that there was such a procedure in operation and that his name would be kept on the list.

(6) From the Hon. Secretary of the National Horse Association of Great Britain, acknowledging with thanks the Secretary's communication relative to the re-appointment of Messrs. McIntosh and Perryman as the Division's delegates to the Publicity Committee of the N.H.A., and stating that the Committee had decided to maintain its "Back to the Horse" campaign owing to the generosity of Sir Lees Knowles and other gentlemen.

**(7) A letter from the N.V.M.A. was received, setting forth the desirability of members contributing original articles to the *Veterinary Record*.**

**Mr. McIntosh supported this and stated: "If only each member recorded one case annually, ample material would be provided."**

Several Fellows entered into a rather lengthy discussion.

Professor Macqueen criticised the Editorial Committee, particularly in regard to the delay in publication of an article relating to the Dr. Shave Testimonial.

Mr. McIntosh replied, pointing out the fact that the matter was really a domestic one and was really of no scientific, or even wide professional interest.

Dr. Tom Hare eulogised the steady progress the *Record* had made of late years, but strongly opposed the publication of anonymous articles, which he characterised as "one of the greatest mistakes ever made." Full recognition should be made where quotations were used in articles.

Professor G. H. Wooldridge: A lot of good material was lost to us when we declined to publish any articles without the name of the writer. But it must not be forgotten that the rule holds as it did before with regard to contributions to the correspondence columns of the *Record*.

Mr. Henry Gray: I want to say that the *Record* is the only paper we have that belongs to the profession and there seems to be no freedom of the press.

The discussion then terminated.

New Members.—(*a*) *Nominations*: Mr. C. G. Hobson (Golders Green) and Mr. C. E. Woodrow (Wellingborough). (*b*) *Elections*: Mr. C. W. Howard (Dorking), Captain F. W. Medlock (Kingston-on-Thames), Mr. E. L. Taylor (Weybridge) and Mr. R. A. Willett (Staines).

### Morbid Specimens and Cases of Interest.

The President: There are several specimens on the table, most of which, I believe, are exhibited in connection with Professor Smythe's paper, but if there are any others to be brought before us I call upon members to present them.

Major Hamilton Kirk exhibited the bladder of a cat, which organ contained a considerable quantity of very viscid mucous which, during life, prevented the passage of urine so that the animal had to be destroyed. [This exhibit is described in detail in our Clinical Section this week.—Ed.]

Mr. W. Perryman: You will remember that at our last meeting Mr. Elmes brought an interesting specimen of keratoma and that I promised to bring a specimen of a

case that has been under my care for some years, and which I was able to follow out from beginning to end.

For twelve months this animal had continuously gone lame and there was pus formation. I removed a large portion of the horn on several occasions and the animal would go to work for a few weeks and then go lame again. I explained to the owner that I thought there was a possible chance of recovery if the front of the foot were stripped. He consented to the operation and I took practically the whole of the front of the foot away. I cast and chloroformed the animal and took the whole of the horn away, including the sensitive laminæ, right down to the pedal bone. The use of a tourniquet rendered the operation practically bloodless and so it was possible to follow right down to the diseased tissues. The horse made a remarkable recovery and was at work in five to six weeks. The date of the operation was July 4th, 1923, and the animal died on the night of September 17th of last year, 1927, from a twisted bowel.

You will see from the specimen where all the laminæ have been removed; there is modified horn structure there, and, as compared with it, you can see on the other foot, well-marked, all the laminæ intact. You can also see the different conditions of the bones.

The whole point is that the operation was a success and was justified, and that the owner was very satisfied. Professor Wooldridge stated, when Mr. Elmes' specimen was discussed at our last meeting, that it was very difficult to follow a case of keratoma through from beginning to end. This is the only case of the kind which I have been able to follow out to the finish and I think for that reason it is particularly interesting. (Hear, hear.)

Mr. J. D. Williams: I have not brought a specimen, but I have here a canine catheter. I went this afternoon to the best surgical instrument makers in London and I discovered that, in my opinion, you cannot buy a catheter that is of any use for a small dog. I had the experience recently of trying to pass the smallest catheter one could buy in a small dog, a Fox terrier, and I found it was impossible. I made a *post-mortem* afterwards and I found it was impossible even then to pass the catheter through the groove in the os penis. If anyone knows where I can get a catheter sufficiently small I should be very much obliged for the information.

Major Kirk: I think Mr. Williams can get all he wants from Arnold's. I have about eight catheters of different sizes and I pass them in small dogs all right.

Mr. Williams: I could not get anything smaller than a No. 1, and this catheter would not pass through the os penis.

Mr. Male: What breed of dog was it?

Mr. Williams: A Griffon.

Professor Wooldridge, requested by the President to speak to Mr. Perryman's exhibit, said: I have only to express my thanks to Mr. Perryman for bringing this specimen here to-day and letting us see this condition after four years. As I said last time, I have not had the opportunity of following through to the end the cases of keratoma for which I had performed the operation of stripping the hoof, but some have done exceedingly well.

What interests me particularly about this case is that when it has been stripped, after this long time you find a prominence in the hoof indicating where it has been stripped, whereas I would have expected to have found the normal thickness of hoof from top to bottom.

Mr. Henry Gray: Is that prominence at the site of the stripping operation not due to the fact that a horn tumour has no nutrition of its own? Although you may remove the horn tumour it will re-grow unless you remove the structures that secreted it.

Professor Wooldridge: That is realised. Mr. Perryman stripped the hoof to the coronet and when he came to the groove he curetted it down to the bone. There is no groove in the os pedis in the upper portion of the bone, so to me the mystery remains.

Mr. G. P. Male: To my mind, the interesting thing about the specimen is the fact that there is a side bone on the inside of the hind foot.

Professor Macqueen: As far as I can make out, one of these hooves now has a small horn tumour under the wall. My experience in dealing with these cases is that there is no certainty that after removing a section of the wall, including the horn tumour, you may not have a recurrence. A much better plan is to resort to neurectomy.

In Mr. Perryman's specimen the depression in the toe of the os pedis is not so deep as I have seen it. I have specimens with much more extensive depressions in the os pedis and in the fresh specimens you will find there are no sensitive laminæ lining the groove; the sensitive membrane is reduced to fibrous tissue. So far as I can make out, the growth is simply modified horn.

Mr. Perryman: I should like to make some reply with reference to the fact that perhaps I have not made it very clear that I removed the whole of the sensitive laminæ right down to the pedal bone, with the idea that the sensitive laminæ were the cause of the deposit of the keratoma. I think it will be granted that the laminæ certainly do form some horn. You may strip the whole of the wall away and in the course of a few weeks you will get a growth of modified horn. I would suggest that one reason why the animal went sound after the operation, despite the presence of modified horn, was that by removing the laminæ right down to the pedal bone I destroyed the sensitive parts to a great extent, and the cicatricial tissue found afterwards is, I believe the physiologists tell us, not very well supplied with nervous tissue.

The President now called upon Professor McCunn to open the discussion upon Professor Smythe's paper.

The discussion occupied the remainder of the evening, and at its conclusion the essayist and the opener were heartily thanked for their valuable contributions.

The meeting concluded with a vote of thanks to the President for his conduct of the meeting.

J. F. Macdonald, *Hon. Secretary.*

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## North of England Division.

### Annual Meeting.

(*Continued from page* 303.)

During the business part of the meeting the retiring President and Mrs. Rider entertained the ladies of the Division to progressive whist in the University Union. A large company assembled, including Miss McIntosh,

Mesdames Peele, Davidson, Christopher, Wilkinson, H. S. Elphick, C. Elphick, Finney, Isherwood, Pickering, Mitchell, Hicks, Hill, J. H. Taylor, Jackson Young, J. R. Rider and many other ladies. The first prize was won by Mrs. Hill, Darlington.

At the conclusion of the meeting the gentlemen joined the ladies at tea, and before the company dispersed, the PRESIDENT (Major Peele) moved a hearty vote of thanks to Mr. and Mrs. Rider for their hospitality, remarking that he knew their object in gathering the ladies together was primarily to ensure that they should have an opportunity to meet before the Congress, so as to be able to form an efficient Ladies Committee. He was quite sure that object had been achieved.

Mrs. RIDER briefly thanked the President, and said it was a great pleasure to know that their efforts had been so successful.

J. R. RIDER,
*Hon. Secretary.*

## Students' Contributions.*

### PARTIAL FŒTAL ATELECTASIS.

By J. ADAMSON, JUNR., School of Veterinary Science, The University, Liverpool.

*Subject.*—Pedigree Shire colt foal, four days' old.

*History.*—Life was delayed at birth and artificial methods were necessary to induce animation. Described by owner as having "asthma."

*Symptoms.*—Difficulty in breathing, the inspiratory efforts being quickened and shallow. The foal also made a peculiar noise when suckling, and oscultation of the chest revealed portions of solid lung.

Pulse, 80; temperature, 103°; respirations, 56.

*Diagnosis.*—Imperfect expansion of the lungs.

Next day the foal seemed much worse and was unable to stand. The owner said he had hand fed it and administered a little brandy. The treatment of stimulating expectorants was continued and the chest rubbed with stimulating liniment. The foal died during the night.

*Post-mortem.*—On opening the chest, about two-pints of dark-brown fluid escaped. The left lung was normal in colour and size, but the right lung was of a reddish-grey colour, and showed numerous light areas varying in size from that of a pea to that of a small marble. It was of a firm consistency, and in a collapsed state; a piece was placed in water and failed to float.

Microscopical examination showed that the lung alveoli were filled with small round-celled exudate, and in many places early fibrinous tissue cells occupied the inter-alveolar spaces. Each of the nodules was surrounded by a delicate fibrous tissue capsule, the interior of which was filled with necrosed or partly-necrosed tissue in which the outlines of the alveoli were just visible. The nuclei of these cells failed to stain.

* Presented for award under the N.V.M.A. Clinical Prize Scheme for Students, 1927.

### PARALYSIS OF THE LARGE COLON.

By J. ADAMSON, JUNR.

*Subject.*—Bay cart gelding, eight years old.

*History.*—This horse has latterly suffered from attacks of abdominal pain, recurring about once every three weeks. These have yielded to chlorodyne 4 drams, repeated at intervals of two hours, followed by aloes barb., 6 drams.

*Symptoms.*—When first seen on August 5th, the horse was in considerable pain and sweating profusely, three doses of chlorodyne and ol. lini., one pint, not having had the desired effect. Pulse, 60; temperature, 102°F., and respirations, 82. Received morphinæ, 8 gr. and, later, aloes, 6 drams and a further dose of chlorodyne.

*August 6th.*—Horse still uneasy. Pulse, 60; temperature, 103·5°F. and respirations, 40. Received morphinæ 5 gr. and an enema of warm soapy water, but no fæces were returned and none could be felt in the rectum. Horse was given calomel and nux vom. *a.a.*, 1 gr., followed by three doses of nux vom. (1 gr.) at intervals of six hours.

*August 7th.*—Horse now much easier. Pulse, 60; temperature, 103°F. and respirations, 24, but no fæces had yet been passed, so an enema was given, but with no satisfactory result, and mag. sulph., 8 ounces.

*August 8th.*—Horse now quiet. Pulse, 52; temperature, 102°F. and respirations, 14. Received enema and ammon. carb., 4 drams, nux vom., 1 dram, repeated every six hours.

*August 9th.*—Pulse, 60; temperature and respirations normal. The horse was now eating well at sloppy bran and linseed, and a little grass. It received an enema and a small amount of dung was passed. This was followed by arecoline hydrochlor., 2 grs., but this had no result other than to make the horse perspire and salivate profusely.

*August 10th.*—Horse normal, except that no fæces had been passed. Horse received an enema and a further grain of arecoline, but with no result.

*August 11th.*—Pulse, 50; temperature and respirations normal, but no fæces. The horse was now receiving enemas repeated three times a day.

*August 12th.*—Pulse, temperature and respirations normal; horse eating well, but no fæces had been passed. The large colon could be felt *per rectum* to be increased in size and "doughy."

*August 13th.*—Horse normal and eating well, but no fæces. Received strychnine, 1 gr. hypodermically. Enemas were still continued, but with negative results.

*August 14th.*—Horse to all appearances normal, but had passed no fæces as yet. Received a further grain of strychnine.

*August 15th.*—No fæces. Large colon could now be felt very distended and it only appeared to be a matter of time before rupture took place.

*August 17th.*—A small amount of dung was passed in the water from an enema and horse was given ammon. carb., 4 drams, and nux vom., 1 dram (4 doses).

*August 18th.*—Horse had continued to eat well up to this date, but to-day he refused his food, became uneasy and died.

*Post-mortem examination* showed a rupture of the large colon about six inches long. This part of the intestines was full of a semi-liquid mass of food. No calculi or worms

were seen, and, apart from distention, the intestines were normal throughout and there appeared to be no reason why they should not function in a normal manner.

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### Bacterial Necrosis of the Liver in a Cow.

By W. J. Cooper, Royal Veterinary College, London.

*Subject.*—A shorthorn dairy cow which was in full milk after calving her third calf.

*History.*—This cow was bought for a sanatorium for consumptives and was examined after purchase by the veterinary surgeon. Three days later, the veterinary surgeon was called, as it was thought the cow had a chill.

*Symptoms.*—The nostrils were dilated; forelimbs outstretched; grunting and some blowing; respirations hurried and shallow; pulse small and hurried (100 per minute); temperature, 106°F.; an unequal surface temperature; v. mucous membranes dull, and some constipation.

*Auscultation.*—This revealed moist bronchial sounds, with dull areas yielding some pain on pressure in the anterior liver region.

*Diagnosis.*—This was not delivered as final, as the veterinary surgeon regarded the case as somewhat peculiar; but prescribed treatment for congestion of the lungs.

*Treatment.*—General:—Attention was paid to ventilation and general hygiene, gruels and a succulent diet were prescribed, with green-meat as the predominant feature.

1st day.—Liq. strychnina hydrochloridi ℥i. was given together with pot. nit., ℥ij. in the drinking water. Liq. ammonia acetate, ℥ij. with spirits of æther nit., ℥ij. three times daily, were prescribed to be given in small drenches. Sinapisms were directed to be applied.

2nd day.—The symptoms appeared somewhat easier, the temperature was down to 104°F.; there was less grunting, the mucous membranes were pallid but not jaundiced; the treatment was continued.

3rd day.—The animal was weaker; she began to go down, and progressively got weaker, to succumb on the seventh day after receiving stimulative treatment.

*Post-mortem.*—The outstanding features of this autopsy were lesions in the liver from the size of a sixpence to that of a two-shilling piece; they were circular in outline, fairly well marked off and yellow in colour. There was a central necrotic zone, an outer softer zone with a capsule of fibrous tissue. A specimen was forwarded for pathological diagnosis to the Royal Veterinary College. The verdict was bacterial necrosis of the liver (necrosis nodusa multiplex hepatis).

*Conclusion.*—It is generally accepted by eminent pathologists and clinicians, that the clinical positive diagnosis of bacterial necrosis in the liver of the cow is difficult. The clinical picture is conflicting, and differentiation from congestion of the lungs is not easy where there is difficult respiration; indeed, some writers quote symptoms of catarrhal pneumonia with enteritis in connection with the disease, while other authorities are of the opinion that the disease can be easily confused with portal congestion of the liver.

### Enteritis with Jaundice in the Horse.

By W. J. Cooper.

*Subject.*—An aged Shire gelding, which was used for general farm work.

*History.*—The gelding, on returning from its usual work, exhibited apparent symptoms of colic and was promptly drenched with a "quack" cattle purgative drench.

*Symptoms.*—The veterinary surgeon was called the next day and found the animal depressed; respirations shallow—hurried; pulse 92; temperature 103° F.; V.M.M. yellow; urine yellow; and super-purgation in evidence, with straining.

*Diagnosis.*—The veterinarian gave it as his opinion that the horse was suffering from enteritis, that the subject undoubtedly was jaundiced, and that he was then in a condition of super-purgation, which had been more pronounced before his arrival. He further thought the animal had received a toxic dose of croton oil in the cattle drench; but from the present depressed condition it was impossible to say whether the horse had suffered from colic or not.

*Treatment.*—Morphia hypodermically (gr. v.) was given and liq. amm. acetate (℥ii) doses three times daily in starch gruel. Pot. nit. (℥ii) was given in the drinking water. This treatment was persisted in, as the second visit showed the pulse 86 and stronger, and a general improvement. Calomel was administered, in addition, in small doses on the third day, when the animal showed a pulse rate of 70, with further general improvement. On the fourth day the pulse was 56, with a normal temperature and further marked improvement. Treatment was now stopped, except for the pot. nit. and starch gruel, and the horse made an uninterrupted recovery.

*Diet.*—This consisted of starch gruel, supplemented with linseed tea, and green meat, then on to bran mashes (not sloppy), and finally on to crushed oats with bran mash later.

*Clothing.*—The horse was rugged and bandaged and hand rubbed on the ears and legs daily.

*Conclusion.*—The occurrence of jaundice from croton oil poisoning does not appear to follow classical pharmacological evidence, which states that "there is a great increase of intestinal secretion but not of bile" (Hall-White). Veterinary toxicologists do not appear to mention bile secretion in this connection, but enteritis most certainly is mentioned, and from this fact, together with the circumstances of its occurrence in this case, one might reasonably deduce croton oil as the cause.

Further, Professors Craig and Kehoe state that "histologically there have been noted foci of necrosis or degeneration of cells in the liver," ("Plant Poisoning," Annual N.V.M.A. Congress, Cambridge, 1925), which might cause jaundice from blocking small bile ducts with broken down liver cells.

The quotation given above refers to the toxic histological effects of ricin; but since crotin also is a phytotoxin, and the essayists are of the opinion that "the differences of other phytotoxins from ricin are chiefly relative to the degree of toxicity, etc." (ibid.), the pathological conditions quoted would relate also to the effects of crotin, and

possibly account for the occurrence of jaundice with enteritis in the horse, from a toxic dose of croton oil.

Finally, some eminent authorities are of the opinion that gastro-enteritis is associated with acute yellow atrophy of the liver from some forms of plant poisoning, this combination being well exemplified by the toxic effects of lupine.

### A Case of Œsophageal Obstruction in a Dog.

By J. M. McDonald, Glasgow Veterinary College.

The subject was a wire-haired Fox terrier, with a history of having, three days previously, swallowed a piece of mutton bone. Professional advice had been sought elsewhere, when it was stated the bone had been located in the œsophagus, and treatment consisting of oil per mouth and liquid diet prescribed. A swelling in the abdominal cavity was undiagnosed. When seen here the dog appeared to make frequent attempts at deglutition, and gave occasional howls of pain. The owner said that immediately after feeding, the dog vomited.

On palpation, a rounded firm body could be felt high up in the left flank, freely moveable in all directions except ventrally. From its position and evident attachment to the abdominal roof, this lump was not believed to be the bone, but after insertion of a finger into the rectum and further palpation, was diagnosed as a floating left kidney.

The bone, it was decided, was still in the stomach or œsophagus—preferably the latter, judging from the persistent attempts at deglutition. The probang was passed repeatedly, but no obstruction could be felt, but this fact was not taken as being evidence of absence of the bone. Final diagnosis was made of lodgment of the bone in a dilatation of the gastric end of the œsophagus. Treatment prescribed was liquid diet, and acid nitro muriatic, dilute, in 10℥. doses three times daily, the latter with a view to hastening the dissolving of the bone in the absence of gastric juice. Chloral hydrate was also given as a sedative, if required. Laparotomy and gastrotomy were thought of, but deferred owing to the weak state of dog. At this stage, the owner asked for an X-ray examination to confirm diagnosis. This was made, and the location of the bone fully exposed, lying in the œsophagus immediately anterior to the diaphragm. The nature of the abdominal lump could not be decided by the screen or photograph. The bone was seen on the screen to be a vertebra, with the neural canal showing well defined, lying transverse to the long axis of the œsophagus.

A week later the dog was brought back for report and X-ray examination again.

The fluorescent screen showed the bone still in the same location, but visibly smaller and more diffuse in character. The condition of the dog was appreciably better. Treatment as before was continued.

A few days later the dog left with his owner for the holidays and called on professional skill elsewhere. Another X-ray examination there left the observers in doubt as to whether there was a foreign body in the œsophagus. Laparotomy was performed, and palpation of the stomach and diaphragm gave indefinite results, neither a negative nor a positive decision being arrived at. Unfortunately, gastrotomy was not performed. The abdominal body was discovered to be a floating left kidney. Three weeks later the dog was reported to be recovering rapidly.

## NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

### Diary of Events.

April 23rd—Meeting of the Editorial Committee, N.V.M.A.
April 25th—Meeting of the Scottish Metropolitan Division at Edinburgh.
April 27th—Meeting of the Royal Counties' Division at Oxford.
April 27th—Meeting of the Yorkshire Division at Leeds.
May 10th—Nominations for Election to Council, R.C.V.S.
May 24th—R.C.V.S. Voting Papers and Annual Reports issued.
Entries due for D.V.S.M. Examination.
May 30th—R.C.V.S. Voting Papers to be returned.
June 7th—Annual General Meeting, R.C.V.S., 12 noon, at 10 Red Lion Square.

### The N.V.M.A. Scale of Salaries for Whole-time Veterinary Appointments.

The attention of members of the Association is drawn to the fact that the Council has revised the above scale. They can obtain copies of the new scale upon application to the General Secretary N.V.M.A., 10 Gray's Inn Square, W.C.1.

### Ministry of Agriculture's Travelling Research Fellowships.

On the recommendation of the Advisory Committee on Agricultural Science of the Ministry of Agriculture, the following grants have been awarded, among others:—£75 to Mr. N. Bissett, M.R.C.V.S., University College, Cardiff, for a visit of two months to the Pasteur Institute, Paris, to study epidemiology in domestic animals. £250 to Mr. A. D. McEwen, B.Sc., M.R.C.V.S., Royal Veterinary College, for a visit to the United States to study American work on contagious abortion in cattle.

### "An Infectious Disease of Bovines."

We draw the attention of our readers to a summary of cases of a complicated condition, described under the general heading of "An Infectious Disease of Bovines," by Mr. O. Stinson, in the *Record* of April 7th (p. 279). So far as we are aware, this clinical entity has not been previously observed, and it is instructive and interesting to note that certain types have been recognised. It will be remembered that our issue of March 24 contained a report of a paper read before the North Midland Division by Mr. S. E. Sampson, on "Infectious Pneumonia of Adults," and it may be more than a coincidence that the two outbreaks occurred at the same time.

We hope that we shall receive further reports of this disease, which appears to resemble hæmorrhagic septicæmia.

### Obituary.

"The death occurred yesterday at his residence, High Street, Ballymena, of Mr. Gordon Stuart, M.R.C.V.S.,"

says the *Irish News* of April 11th. "Deceased had a seizure some few years ago, and since then had more or less relinquished his professional duties other than those connected with his post as Inspector of tuberculous meat at the public abattoir in Ballymena."

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HAMILTON.—April 9, at a Harrogate nursing home, Jeanie Hunter, the beloved wife of Daniel Hamilton, F.R.C.V.S., Edgerton House, Harrogate.

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PERSONAL.

*Marriage.*—GREGORY-EVANS. At Zion Chapel, Oswestry, on the 14th April, by the Rev. H. E. Griffith, M.A., Henry Cecil Gregory, M.R.C.V.S., D.V.S.M., youngest son of Mr. and Mrs. H. P. Gregory, of Weston Grove, Oswestry, to Mary, only daughter of Mr. and Mrs. A. E. Evans, of Brodawel, Shrewsbury Road, Oswestry.

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ARMY VETERINARY SERVICE.

LONDON GAZETTE—WAR OFFICE—REGULAR ARMY.
COMMANDS AND STAFF.

April 10—Asst. Dir.-Gen., Army Vet. Servs.—Bt. Lt.-Col. W. E. Schofield, O.B.E., R.A.V.C., relinquishes his appt. at the War Office (April 1).

The follg. appt. is made at the War Office :—

Asst. Dir.-Gen., Army Vet. Servs.—Bt. Lt.-Col. W. H. Walker, D.S.O., O.B.E., R.A.V.C. (April 1).

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April 13.—Major R. H. Knowles is restd. to the estabt. (Mar. 31).

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HORSE OUSTING THE MOTOR.

"Welsh towns are gradually going back to horse traction," said Mr. D. D. Williams, Board of Agriculture live stock officer for Wales, in an address to Pembrokeshire farmers. The demand for good shire horses, he added, was becoming keener every day.

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At the annual meeting of the Suffolk Horse Society held recently, Sir Cuthbert Quilter stated that the demand for the clean-legged Suffolk had been very pronounced from all over the country, and the supply of geldings was hardly equal to the demand. Mr. C. S. Wolton said that the Suffolk horse had given the tractor "a nasty knock." He spoke of the breed's weight-pulling performances at the Woodbridge Show the previous day, when a ten-year-old Suffolk gelding was shown by the dynamometer to have pulled 17½ tons. Mr. Wolton said that the King, who was a patron of the society, had recently been buying Suffolk geldings, and it was hoped that a stud of Suffolks would eventually be installed at Sandringham.

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DUBLIN'S STEP FORWARD.

"At the meeting of the Dublin Commissioners yesterday, on the recommendation of Dr. Dwyer, it was decided to appoint an additional veterinary inspector instead of appointing a sub-sanitary officer to replace an official who had resigned," says the *Sunday Independent* (Dublin) of April 1st. "Dr Dwyer reported that he was of opinion that this step would make for greater efficiency of bacteriological examination of milk, including animal inoculation for the detection of tubercle bacilli, which could be carried out on a much bigger scale than was possible at present, and the City Medical Officer of Health was convinced that this work was of the utmost importance from the point of view of securing a milk supply for the city free from tubercle bacilli. As well as performing this essential work, the additional inspector would help in the outdoor inspection work, which was so very necessary to control the equality of the city food supply.

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Derbyshire Agricultural Committee has decided to appoint a special veterinary inspector to Derby Cattle Market on Fridays.

The Diseases of Animals and Executive Sub-Committee suggested that as a precaution against the spread of foot and-mouth disease a special veterinary inspector should be appointed for the Friday cattle market in Derby, and that the fees and travelling expenses of the inspector should be shared equally by the County Council and the Corporation.

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TUBERCULOUS COWS ON GUARDIANS' FARM.

The fact that some of the herd of cows owned by the Edmonton Board of Guardians were suffering from tuberculosis led to a discussion at the meeting of the Board recently. The expert who had examined the herd expressed the view that the milk, which had been consumed at the Board's Poor Law schools, had probably not been infected. Mr. Metivier said the guardians were not farmers; they could not run a farm as amateurs while professionals had failed. Mrs. Mason mentioned that they had recently bought thirty cows and had spent £2,000 upon new cowsheds. The Board rejected, by 21 votes to nine, a resolution to let the farm and sell the stock. By a large majority, they decided to dispose of or slaughter all the cows infected, or supposed to be infected, to hold periodical examinations of the cows, and meantime to have all the milk sterilised before use.

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# CORRESPONDENCE.

**Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.**

**All correspondence must bear the name and address of the contributor for publication.**

**The Editor does not hold himself responsible for the opinions of his correspondents.**

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## Absence of Œstrum in Cattle.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—It may be of interest to other practitioners who, like myself, are engaged in sterility work and who frequently come in contact with cases of absence of œstrum, particularly in heifers, to know that I have been successful in inducing œstrum in a pedigree Guernsey heifer, two years old, that had not been in œstrum before, and on which various remedies, and massage of ovaries, were attended with negative results.

As a last resort, I communicated with Messrs. Armour and Company, of Queen's House, Kingsway, W.C.2, giving particulars of the case, and they sent me an ovarian extract in liquid form, to be injected in doses of 5 cc. every third day, by the deep intramuscular route. In addition, a capsule containing ten grains of thyroid, 3 per cent. siccum, was given each night in the feed. The gluteal muscles were selected as the site of injection and, after the fourth injection, œstrum was observed on the third day following, and the heifer was served.

I think that this ovarian extract is well worth trial, and I hope that those who have these cases will try it, and record their experiences, to decide if we have at last got what we have wanted for a long time, as it is of course impossible to base an opinion on a single case.—Yours faithfully, J. F. D. TUTT, M.R.C.V.S.

1 St. Cross Road, Winchester.
10*th April*, 1928.

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*The Editor acknowledges the receipt of the following* :—

Communications from Messrs. Herbert Buckingham and G. A. Moore.